

THE STATE AS MANAGER. See p. 460.

MOTOR LIFEBOATS OF THE ROYAL NATIONAL LIFEBOAT INSTITUTION (Illus.). See p. 465.

SHIPBUILDING AND SHIPPING RECORD

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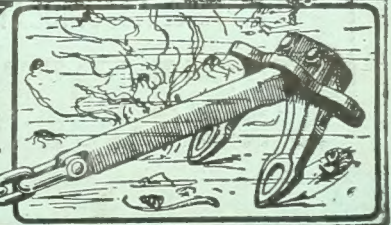
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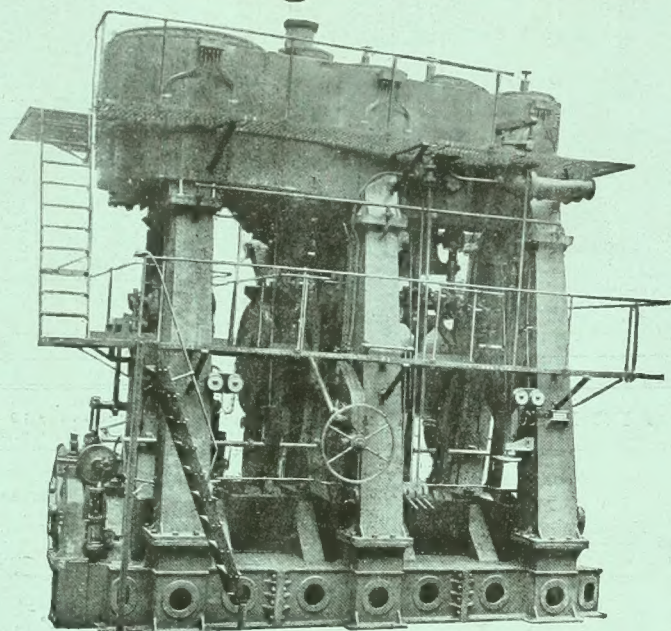
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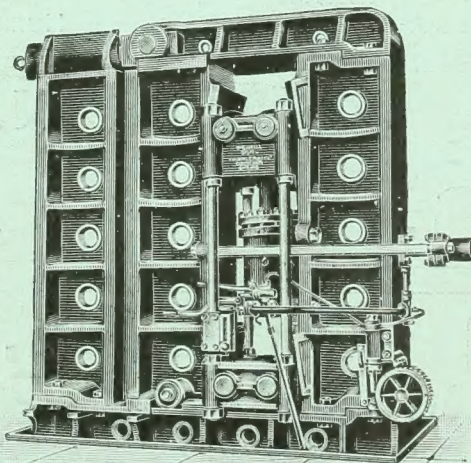


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THURSDAY, APRIL 25, 1918.

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NO provision in this year's Budget singles shipping out for special treatment, remedial or other. Last year it was made the subject of anomalous differentiation in regard to the computation of excess profits. It would be quite fair now to ask

Shipping and the Budget. that the industry should in this matter be placed on the same footing as others, and incidentally the eye which the Chancellor of the Exchequer

now has on farmers will remove at least some of the grievances which shipowners have felt particularly hard to shoulder while agriculture went scot free. Mr. Bonar Law's mind at present is given to the absorbing task of raising new revenue, and in that process an anomaly applying only to one industry falls into the background. There is no class in the community but will feel the tremendous burden of the taxation to which £114,500,000 a year is being added. Income tax at 6s. in the £ and super-tax at 4s. 6d. will make a big hole in large incomes and weaken the resources from which future capital must be drawn. This indeed applies with extreme force to an industry like shipping, which has been exposed to immense hazards and losses of war. But the needs of the war are paramount. Money must be forthcoming as well as men. The greater the burden on the taxpayer becomes the more insistent the obligation on the Government to secure departmental economy, and we think that the expenditure of the Ministry of Munitions, of the Ministry of Shipping, and on the National Shipyard Schemes would merit closer scrutiny.

The number of salvage claims which are coming before underwriters at the present time are not small in number nor in amount, though if the present difficulties of navigation are taken into account this is not particularly surprising. An aspect of these claims which escapes consideration at a casual glance is the manner in which the values of the insured

interest influences the claim. It is for us to consider the matter chiefly from the point of view of the underwriters on the hulls of vessels. To them the inflation of values is not altogether a detrimental factor, since, although the values of hulls are increased enormously, the values of cargoes have probably outstripped them in this matter. Hence it will be seen that where both ship and cargo bear their proportion of a claim the value of the cargo may well absorb an amount compared with which the sum for which the hull underwriters are liable is not great. It must not be forgotten, however, that the amounts awarded for salvage services in these days have increased proportionately with all other expenses.

The insurance of a new steamer depends very largely upon the other vessels of the fleet to which she belongs. An owner who has

Insurances of New Steamers.

insured his vessels with a proviso in the slip that new and/or acquired vessels shall be added to the insurance, has but to advise his brokers of any addition and the risk attaches automatically. It sometimes occurs that there is

a new steamer to insure which cannot be dealt with in this way, either on account of her owner having no other vessels insured, or because the existing insurances of the fleet do not lend themselves to an addition being made. In cases such as these it falls upon the insurance market to assess the risk on its merits. To a layman it will come as a surprise to learn that at the present time such a risk is written at the same rate per cent. as it would have been before the war. It would seem that the insurance market, although insisting on a rise in premium on all existing insurances, is prepared to accept the new steamer at pre-war rates, relying upon the probability that such a vessel will run free of claim for the first year of her life. This is not to say that these insurances cost owners the same amount that they would have paid before the war, for the enormous values on which steamers are now insured bring the premiums to a figure of no small dimensions.

We have on more than one occasion drawn attention to the importance of the development to the utmost of the enormous

Improvement of Canals.

facilities for economical transport represented by the existing canal system of this country, and we are pleased to note that this view is shared by the Government. In the reply—published recently—of the Prime Minister to the deputation from the Trades Union Congress Parliamentary Committee, which waited upon him after the recent Trade Union Congress, in dealing with this subject, Mr. Lloyd George said: Canals had been steadily discouraged, and that had been largely due to railway competition. He was not sure whether anything would make them fit for motor transport, but that was an engineering question; it was a question of reconstruction so far as the canals of this country were concerned. At the present time we were fighting the canals of Germany; they were part of the weapons with which we were confronted, but luckily we had the fine canal system of France. It is therefore to be hoped that in the near future something will be done to develop the canal system of this country. Such work should, if possible, be undertaken after the war, for in addition to absorbing labour, both for the actual work of reconstruction and for the building of motor tugs and barges for navigation on the improved waterways, the cheap transport facilities thus afforded will assist in the post-war development of trade.

The formation of a truly National Government in Spain, while it gives an appearance of calm, does not solve the grave problems which troubled the previous administration.

Spanish Shipping Policy. Not the least important of these is the attitude of Germany towards Spanish shipping. The late Government left unanswered a German note protesting against the employment of Spanish

tonnage in trade with the Allies, this being considered a breach of neutrality, but the present Government has replied with great clearness that they do not share this view. Either as a consequence of, or in anticipation of, threatened German action, the Government is putting into force a scheme—prepared in outline some time ago—for the requisitioning of all Spanish ocean-going tonnage, beginning with the ships of the *Compañía Trasatlántica*. It is conceivable that this arrangement might, if the Germans took an actively hostile attitude towards the Spanish Government instead of towards individual ships, become necessary in the interests of the country. Tonnage would have to be protected, and that would involve its organisation into convoys. The Madrid correspondent of *The Times* in drawing attention to these events, suggests that the time is now ripe for the Allies—and the lead might well come from this country—to consolidate with the Spanish Government such friendly understandings as will give open recognition to the fact that Spain's future prosperity is bound up with that of the Allies.

Prussian Militarism's dreams of conquest in the East have, apparently, no attractions for Bremen's shipping interests, for, in a

Bremen's War Aims. statement of war aims sent by their Municipality to the Bundesrath, there is no allusion to them.

Among the things which Bremen desires are, however, a Colonial Empire proportioned to Germany's economic needs, an indemnity paid partly in raw materials, freedom of the seas, and freedom to compete with all other Powers in "the world's markets." From that, it is comparatively easy to see where the shoe pinches in Bremen. What is not so easy to realise is how Bremen, or any other German centre of pre-war maritime activities, can hope to achieve these aims by their current methods. Their sink-at-sight policy has estranged the present generation of seafarers. Those who at present go down to the sea in Entente ships assert that they will never again have anything to do with a German. Moreover, "the world's markets" having heard of U-boat atrocities, the torpedoing of hospital ships, the bombing of civilian populations, the bombardment of open towns, and the introduction of liquid fire and poison gas, are likely to be unprofitable fields for German trade for many years to come. We are not, of course, building up hopes of our own on these facts; the Entente's war aims are definite and not at all obscure. But, in view of the facts stated, it puzzles us to see how Bremen people can hope to realise their expectations.

While the need for "ships and still more ships" is vaguely recognised on all sides, it is only when concrete examples of the results of the world's tonnage shortage are given that

Ships and More Ships. an adequate realisation of the far-reaching effects of the restrictions which are imposed on trade by the lack of ships can be made.

With the cutting off of the supplies of grain from Russia and Roumania, we have become more and more dependent upon Canada and Australia for our supply of this essential commodity, and it is well known that we have purchased largely from both of these Colonies. But the production, especially in Australia, is still largely in excess of the demand, and the result is that vast quantities are now being stored up awaiting shipment. In fact, it is estimated that even if no further grain is bought in Australia by Imperial Government, it will take at least five years to move the wheat

now stored in the Commonwealth, even assuming that pre-war tonnage is available for the purpose, which is not likely to be the case. Another commodity which is of great importance at the present time is rubber, and here again supplies are being considerably restricted owing to lack of transport facilities. At a recent meeting held in London it was announced that telegraphic advices from Java refer to the complete cessation of shipping facilities and the uncertain prospect of their early restoration; scarcity of shipping facilities is indeed the predominant feature of the rubber industry.

Special defensive and precautionary measures round these shores have led to many Orders relating to navigation under the Defence of the Realm Regulations. Some cases bearing on the legal consequences of compulsory pilotage within some of these areas have recently come before the Courts. The Orders have produced an exceptional situation, and some difficulties have been experienced in interpreting their effect. In one case, that of the *Newholm*, an Order set out that ships "navigating in the waters from the Downs pilot station to Gravesend or vice versa, must be conducted by pilots licensed by the London Trinity House." This was construed by the Court to include ships navigating in the waters which lie between the Downs pilot station and Gravesend. Therefore, the defence of compulsory pilotage was open to a vessel bound from Spain to Middlesbrough, which came into collision in the South Edinburgh Channel while under the charge of a licensed pilot. A similar defence of compulsory pilotage was recently held by the Court of Appeal to be available to the *Penrith Castle*. She was lying in Ryde Roads and dragged her anchor. Being within the Portsmouth Defence area, a special pilot, acting by the harbour-master's authority, took charge of the vessel, which afterwards was in collision. The master of the vessel was bound, under the Order made under the Defence of the Realm Regulations, to obey the directions of the special pilot. These cases arose out of occurrences anterior to the present year. We have not heard anything yet of the new provisions regarding compulsory pilotage which are contained in the Pilotage Act, 1913, and were to come into force this year.

On several occasions during the past year or two we have made reference to the possibility of increasing our trade in Morocco, as well as along the whole of the North African Coast. At one time the monopoly of this traffic was gradually being obtained by German shipowners who were not slow to make the most of their opportunities. Fortunately, for the present, that menace is at an end. Of late, one of the chief obstacles to maritime progress has been the unsatisfactory condition of the seaports, particularly in Morocco, Algeria, and Tunis, but numerous improvements have already been effected. Hundreds of miles of new roads have been built; many light railways have been laid down; a network of telegraphs, telephones, and postal services cover the French zone in Morocco; and many port works have been completed. Moreover, the administration of justice has been reformed and controlled. In short, it will be seen that there is now a most promising market for our manufactures. It is true that shipping conditions at the moment are none too good, because of the difficulty of obtaining tonnage, though the Shipping Controller has promised to do his best in the matter. Unless, however, steps are taken in time to provide or prepare for more efficient services than were available before the war, there can be no possible expansion of British trade. Over and over again our Consuls have drawn attention to the chances that have been missed by us and seized by more enterprising rivals, so that unless the situation undergoes a drastic change, the outlook is not very hopeful. This will be

unfortunate, as the openings are numerous, and are sure to develop as the various territories involved become more settled.

To date very few representative shipbuilding or engineering employers have seen fit publicly to express opinions on the subject of the post-war relations of Capital and Labour, the view the majority apparently take being that the first move of that kind lies with Trade Unionists. During the past few days, however, a very prominent employer has given a clear lead, which, it is to be hoped, many people on both sides will, without unnecessary delay, follow. The employer is Sir George Carter, K.B.E., managing director of Cammell Laird's, Birkenhead, President of the Shipbuilding Employers' Federation, and a member of the Whitley Sub-Committee, and he expressed the views to which we allude in the course of a series of addresses to the workpeople under his charge on the urgent need of increasing their output of tonnage. He declared himself as strongly in favour of a shorter working week, and expressed a hope that before long the employers' federations and the trade unions would be able to meet and mutually agree to make a change of that character. Moreover, he left nobody in any doubt about his attitude towards shop stewards and shop stewards' committees; he had always, he said, "recognised" individual shop stewards, and, in his opinion, it would be a considerable advantage to have committees of them for consultation. If these views are largely shared by members of the Federation of which Sir George is the head, the shipbuilding industry should not find it difficult to arrange its post-war conditions.

Sometimes within the past three years the right to requisition has been pushed rather further than the Courts consider allowable. This has an important bearing upon the liabilities of underwriters for a restraint of princes. In the case of the Russian Bank for Foreign Trade *v. The Excess Insurance Company, Ltd.*, which Mr. Justice Bailhache has just decided, the fact that an Admiralty requisition had gone beyond the powers conferred upon the Board for the moment, operated to free the underwriters from a claim on the above-mentioned ground. The steamer *Wolverton* was in the Black Sea when the Dardanelles were closed by the Turks. She was to have carried to Falmouth a parcel of barley belonging to the plaintiffs, who had insured it with the Excess Insurance Company against the usual perils, including restraint of princes. Some time afterwards the Admiralty issued a requisition for the vessel for the Russian service. The owners complied with it. Was it an order which they were bound to obey? Was it such an act of state that had such force behind it that it became a restraint of princes? Mr. Justice Bailhache found that at the material date the only authority which the Admiralty had to requisition vessels was that derived from the Royal Proclamation of August 14, 1914, and those powers were exercisable only in regard to vessels belonging to British owners within the British Isles or the adjacent waters. There was no power to requisition in the distant waters of the Black Sea. The destruction of the adventure due to the compliance of the owners of the *Wolverton* with the Order, therefore, was not a loss due to the restraint of princes, and the underwriters were not liable.

It is of importance, especially in vessels of high speed in relation to their length, to know the change in trim which will take place from the vessel being at rest to the attainment of her top speed. Some allowance is made by engineers, when arranging drains, &c., for this change in trim, so that a proper flow may be obtained. Take the case of a destroyer of 270 ft. in length and of 900 tons displacement, travelling at 36 knots. The

bow will rise above its initial level from 3 to 4 ft., whilst the stern will fall from 4 to 5 ft., thus showing a total change of trim of from 7 to 9 ft. At slower speeds it may so happen that a vessel may trim by the bow and not by the stern. Thus in certain cases investigated by Taylor in the Washington tank at given $\frac{V}{\sqrt{2}}$ values the bow sinks deeper than the stern, but as the speed length ratio is increased the bow gradually rises and the stern falls. This change in level is brought about by the redistribution of buoyancy caused by the waves set up by a vessel in its progress through the water. In a destroyer advancing at high speed the crest of the bow wave affords so much buoyancy as to lift the bow to a considerably higher level than originally obtained, whilst the stern falls into the hollow of the wave, accordingly depressing the ship by the stern. Vessels of special forms, if driven at extreme speeds, rise bodily. When excessive squatting or trim is observed it is an evidence of high wave-making resistance, which may be unavoidable in the nature of the problem before the builder.

Viscount Furness put his finger on a large cause of our present merchant shipbuilding troubles, when, at the annual meeting of Irvine's Shipbuilding & Dry Docks Company, he indicated the manner in which the State distributes its work. At Hartlepool they had been engaged during the year, he said, on Admiralty ships of distinctive types, a meat-carrying vessel, an oil tanker, cargo liners, and standard ships. Few will be found to disagree with his view that so great a variety of work acts as a deterrent to the best results, because it has had most pronounced visible effects of that character for far longer than most of us care to recall. The Admiralty's own early war-period contracts were indifferently spread, if the idea were to obtain speed of production, and when the standard ships came to be given out, the bad habit was persisted in with equally unsatisfactory results. Under an organiser like, say, Mr. Purdon, good progress could have been achieved by a concentration on one design of standard ship. Apparently, very few yards have been given such an opportunity to distinguish themselves, and the general progress is, consequently, less than it might have been. Under Lord Pirrie's direction, of course, we may confidently expect an improvement, but it is unfortunate that much leeway has already been made without convincing the authorities actually responsible for the practice of the inefficiency of their ways. It is an unbusiness-like arrangement, and it has a marked effect on output.

Priming in steam boilers may be traced to a variety of causes, the chief of which are impure feed water and imperfections in design. The admission of salt, brackish or dirty water, generally produces priming, which shows itself in reciprocating machinery by excessive leakage through the piston and valve-spindle packing glands, and is accompanied by heavy thumping of the piston towards the end of its stroke. Priming with turbine machinery is most dangerous, the projection of water at approximately the speed of steam on the blading throws enormous loads on the latter, and if not attended to at once failure will result. The effect of priming with turbines is very marked, an immediate drop in revolutions is observed, the loss in power corresponding to about 2 per cent. for every 1 per cent. moisture carried over. To prevent priming, careful consideration must be given to the design of steam generator; the overcrowding of tubes in order to obtain the necessary heating surface at the expense of steam space must be guarded against, and sufficient space should be allowed between the tubes—usually about $1\frac{1}{4}$ in.—to prevent restriction in circulation. The fitting of some form of steam dryer or economiser of the

**Squat and
Change
of Trim.**

**Boiler
Priming.**

centrifugal or other type placed inside the boiler shell and communicating with main stop valve is desirable in order to ensure the obtaining of dry steam to the engines. Experience has shown that in boilers subject to priming this additional fitting has materially reduced the carrying over of water to the engine cylinders.

THE STATE AS MANAGER.

LORD INCHEAPE, in returning to the question of State mis-handling of the Chepstow shipbuilding yard in a letter which we publish on p. 462, raises bigger issues than the question of the management of this particular yard. We do not propose to traverse the ground beyond one or two points made by his lordship. He tells how one day in July of 1917 an officer of the Government Shipbuilding Department accepted an invitation to pay a visit to Chepstow to see the progress being made at the new yard there. The Standard Shipbuilding Company, it will be recollected, had embarked on an ambitious enterprise, and needed all the assistance it could get in the way of labour and material to prosecute its shipbuilding programme successfully. It was hoped that a representative from the newly-created Admiralty Controller's Department would recognise the need for granting facilities for another addition to the shipbuilding resources of the country. This official, we are told, inspected the yard, expressed himself delighted, and the outcome was that the Standard Shipbuilding Company lost its yard, for the Government took it over *in toto*. The result of the exchange, so far as we can see from this correspondence and the replies to questions in the House of Commons, has hardly been to the advantage of the country so far as output is concerned, and although there appears now to be a considerable application of the spur as a result of the publicity given the subject, it is to be feared that the resources of the Government have not been utilised as they should have been, and that the Admiralty Controller's Department has, to put it mildly, done no better than private enterprise, fettered as it is in war time, could have executed at smaller cost. The national shipyard scheme is ambitious and it may, by some turn of fortune or by the capable handling of some strong man with intimate knowledge of shipbuilding, justify the time, labour and money that must yet be expended to bring it to an efficient state.

In the meantime, this Chepstow affair looks like one of the many schemes that would have gone much better with a little State encouragement and an entire lack of State interference. History can supply a great many similar cases. The history of the war—when the facts are permitted to come to light—will supply an overwhelming number in addition, and careful scrutiny of State incursions into spheres of commercial activity do not lead us to hope for much.

Even Business Governments and business heads of Government Departments seem bowed down by the crippling organisation which they inherit from their predecessors in office, bespeaking, in fact, the total inability of the Civil Service to realise the meaning of commercial expediency. One looks in vain even to modern creations such as the Ministry of Munitions or even the newer ones, like that which dispenses ration cards, for the application of ordinary commercial routine. Well may business men throughout the country view with apprehension the further application of "Government" to the maintenance of British industry and commerce. No business would survive even a short term if permitted to be run on lines which are deemed the acme of organisation in Government Departments with their inflated staffs trying to justify their existence by the creation of unnecessary detail. Well may men like Lord Inchcape, Sir Owen Philipps and Sir Alfred Booth, from their experience of non-party State mismanagement, regard with trepidation an extension of the principle to the political ambit where everybody else's property but that of those in power would be subordinated to vote-catching ruses and political expediency.

LIMITATIONS OF THE INSURANCE MARKET.

IT has been noted, with some interest, that Canada is increasing the safeguards with which she has always provided her national insurance market with regard to foreign competition. The deposit of \$50,000, which has hitherto been demanded of foreign companies, is to be increased to \$100,000, and a further protection is made secure by the necessity of these companies giving security for an amount governed by the sum of their liabilities. To the home insurance market this appears a very desirable state of affairs, and one that might well be copied in this country to the benefit of the insurance world as a whole.

We have before now stated our reasons for apprehension as to the future of insurance, particularly marine insurance, as a result of the steady increase of the facilities offered to insurers by new companies. Many of these concerns are of foreign origin, and at the present time they are floating on the tide of affluence which has been flowing so steadily for the past few years.

There is no doubt, however, that this happy state of affairs will not continue indefinitely. Much of the present prosperity is due to a combination of circumstances which may cease at any moment. The possibilities of combined war and marine underwriting have been seized and made the most of, and even here setbacks have not been unknown, while the marine market, excluding war business, is only making money on a very average scale. The inflated values of hulls and cargoes play their part as well in the existing situation, and though there is no sign of these values dropping in the immediate future, the day will come when they must, of necessity, decline. Nothing is more certain than that lean years will come. It is then that the necessity for the protection of both insurer and assured will become evident. With values down, the market will be too big for the volume of business offering. To obtain a share of premiums the weaker companies will commence rate cutting; and their number being considerable, a large amount of risks will be taken from the stiffer concerns which will refuse to compete on ruinous terms.

This will engender a weakness of security, a most undesirable state of affairs. As time goes on losses will lead to failures, and the tide of business will again begin to flow in the direction of the sounder concerns which have withstood both rate war and disaster.

This is not a cheerful picture, but unless strong measures are taken it will prove to be a true one. Prevention will be difficult, and the only way of providing against trouble is by strong legislation. In this, Canada has shown us the way, and it must not be forgotten that the machinery for enacting similar measures is already in existence in this country. The Marine Insurance Committee is the very body to frame and propagate legislations on protective lines. The Joint Insurance Committee has it in its power to further such schemes, and the two together can exercise such influence that their representatives would be almost irresistible.

What is required is not only a provision against failure, such as can be made through deposits and securities. A definite control of the capacity of the market is required. At the present moment underwriters at Lloyd's can absorb a certain amount of business. The annual audit governs the liabilities of each syndicate in such a manner as to guarantee security.

A further amount is absorbed by the companies, and the older and more established of these are running lines to the full of their capacities. Further than these come the newer, and more adventurous concerns which, for the time being, are doing well enough. A control of these concerns, based on their assets, and limited by the premium income from risks written in the open market is the first necessity. To such control and limitations the older companies could assent without any trouble since in all probability their compliance would necessitate no change in their existing economy. Next comes the need of preventing the further expansion of the

market by irresponsible speculators. The safeguard here is to be found in deposits and guarantees. It is perhaps too much to hope for any control of the personnel element, represented by the underwriters themselves. Solicitors, doctors, chartered accountants, and several other professional men are unable to practise without the official sanction of their governing bodies, but underwriters have only to be appointed by a board of directors, and they can forthwith commence to write risks to whosoever can be prevailed upon to give them a show.

FABRICATED SHIPS.

IN order to be able to produce the greatest possible number of ships in the shortest space of time, the principles of standardisation in the design and construction of vessels were adopted in this country and also in America. So far, the results achieved have not justified the departure from the practice prevalent before the introduction of standard ships, but there is no doubt that ultimately a rate of production will be achieved which would be absolutely impossible but for standard methods.

The necessity for tonnage has brought into prominence what has been termed the "fabricated" ship, which has been made possible by the adoption of standard designs and standard methods of construction. In other works the "fabricated" ship may be called the "manufactured" ship, and firms whose workshops may be some considerable distance from the shipyard where the erection takes place may be made to be of the greatest service in the production of ships.

The idea of the "fabricated" ship has been taken up both in this country and in America, and some light has been thrown on the methods adopted in the States by Mr. Baldwin, vice-president of the American International Corporation, in a recent speech. The "National" yard in which he is most interested is situated near Philadelphia and has been fitted out with 50 slipways upon which the building of 200 vessels can be undertaken.

Three "National" yards have been laid down, and like those now under construction in this country they are merely for the erecting of material prepared in shops apart from the yard altogether. Three ideas dominated the scheme. In the first place a design simplified and standardised was adopted, so that each succeeding vessel should be an exact reproduction of the first, identical in every detail, thus eliminating every possible variation in size and shape of material. In the second place, all resources germane to shipbuilding in the surrounding country was mobilised to the purpose of producing ships. This included first and foremost the bridge and structural steel industries, then the builders of engines and boilers, the forges and machine shops and factories capable of producing any pieces of equipment entering into a ship, from a propeller shaft to a sextant. Thirdly, the reproduction of vessels in large numbers, every one of exactly the same construction, permits the use of factory methods. The new shipyards are simply the assembling floors of colossal ship factories, whose machinery is made up of all the inter-related wheels of industry, whose employees are a large part of all available labour, and whose conveyer belts are the railways.

With regard to the design of the American "fabricated" ships, all curvature of plates and frames was as far as possible eliminated. No camber was given to the decks, the ship was given no sheer, but a straight deck line from bow to stern, perpendicular sides and a flat bottom, and a strictly rectangular midsection curving only at the bilges. The model was tested in the Washington tank and proved to be economical. It is probably the case that the design of the "N" standard ship, which is that being "fabricated" in this country, has been even more carefully thought out than that adopted in America. The possibility of eliminating transverse curvature and still being able to obtain a form of small resistance has been proven in the case of the British "fabricated" ship also.

If the rate of construction confidently predicted by Mr. Baldwin is really going to be obtained, it affords the best argument yet put forward for standard ships and "fabricated" methods. It is estimated that 25 out of the 120 ships ordered from this, the Hog Island shipyard, will be delivered in 13½ months from September 13, 1917; 25 more in 15 months; another 25 in 18½ months; a fourth 25 in 20 months; and the last 20 in 22 months from this contract date, which will require an average delivery of one ship every two days during the eight and a half months specified. It is said that the "N" type standard ship is being built by Harland & Wolff, Ltd., and if the resources of that great firm were devoted solely to the construction of this type of ship a great production could be expected. We doubt whether this phenomenal output prophesied by Mr. Baldwin can be equalled by any one concern on this side, but if any firm can do it the great establishment of which Lord Pirrie is the chief is capable of such production.

An indication of the tremendous number of concerns which combine to feed a shipyard used for erection only is given by Mr. Baldwin. The resources of 1,000 high-class manufacturing organisations have been mobilised and form part of the equipment of this great national yard. Forty-six steel fabricating shops accustomed to manufacturing steel material for skyscrapers, bridges, gas plants, &c., are requisitioned to feed the national yard at Newark Bay, which is smaller than that at Philadelphia.

The work of laying out these shipyards has been pushed ahead with great celerity in spite of abnormal weather conditions during the past winter. Not only so, but the organising of all the different workshops which could be useful in shipbuilding was accomplished when the yards were being laid out, so that immediately the berths were ready for ships being erected thereon, the material began to arrive from the fabricating shops.

As far as we can gather, those responsible for the preparation of the national yards in this country cannot claim to have made anything like the progress which the Americans have made. The go-ahead business methods shown by the Americans have not been equalled on this side. A reasonable output from our national yards may be ultimately reached, but our existing private shipyards must be looked to, to make good the ravages of war on our depleted merchant tonnage.

PUBLICATIONS RECEIVED.

[A short notice of any publication does not necessarily preclude the subsequent appearance of a longer review.]

Liquid Fuels for Internal Combustion Engines. A practical treatise for engineers and chemists. By Harold Moore, M.Sc.Tech., F.C.S. London: Crosby, Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, E.C.4. 8½ in. × 5½ in. × 1 in. 200 pp. Cloth, 12s. 6d. net.

The Russian Riddle. By Linov N. Preev. London: John Bale, Sons, & Danielsson, Ltd., Oxford House, 83-91, Great Titchfield Street, Oxford Street, W.1. 5½ in. × 8½ in. × ½ in. 52 pages, with numerous charts and diagrams. Price, 6d. net.

Handbook on Canals. Issued by the Canals Control Committee of the Board of Trade. London: His Majesty's Stationery Office, Imperial House, Kingsway, W.C.2, etc. 9½ in. × 6½ in. × ½ in. 28 pages, with maps of controlled canals. Price, 6d. net.

The development of the existing canal systems of this country is regarded by many as one of the essential schemes in the industrial reconstruction which must follow the war, and to the builders of small craft, barges, motor-barges, and tugs this development will be of considerable importance. Meanwhile, to relieve the congestion on the railways, it has been frequently urged that the canal facilities, inadequate as they are, should be utilised to the utmost extent. The Canal Control Committee of the Board of Trade have therefore, issued this booklet with a view to giving manufacturers and others information relating to the controlled canals, the list of towns served by them, and the names and addresses of public

carriers. It is stated that in cases where a manufacturer may desire to purchase boats and run them himself he can obtain such information as he may require from the local sub-committee, a list of the names and addresses of members of which is appended. It would therefore appear that boat and barge builders who are desirous of obtaining this class of trade should also communicate with the local sub-committee. It is interesting to note that the Canal Control Committee record a large increase in the carriage of certain commodities in certain districts and they urge traders to make use of the canals to the greatest extent possible for the conveyance of grain, foodstuffs, coal and munitions.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by Correspondents.]

LORD INCHCAPE AND THE CHEPSTOW SHIPYARD.

4, Seamore Place, Mayfair,

April 21, 1918.

TO THE EDITOR OF SHIPBUILDING AND SHIPPING RECORD.

Might I ask the courtesy of your columns to refer to the official answers given to questions in the House of Commons on the 17th inst. about the Chepstow shipyard which were put by Col. Thorne, Mr. Chancellor and Mr. George Lambert? These questions were not instigated by me either directly or indirectly.

"Hansard" reports the official reply as follows:—

"The company's own engineer stated on July 25, 1917, the dates for completion of the two most forward berths as three and four months respectively, and the rest as six, eight and 12 months from the time when an additional 200 men should be obtained."

The official answer practically corresponds with the statement made in my letter to you published in *Shipbuilding and Shipping Record* of April 4.

My dates were—
2 slips ready October, 1917

2 March, 1918
2 July, 1918
2 October, 1918

The official dates are—
1 slip ready October, 1917
1 November, 1917
2 January, 1918
2 March, 1918
2 July, 1918

My forecast was less optimistic than the Government information.

The Government reply stated that the company's forecast was contingent on its being able to increase its labour force by 200 men, not an extravagant expectation, considering that it had already secured, without any Government assistance, a very large labour force, which was being steadily augmented. I think it will not be gainsaid that it was probable we should be pushing on the work at Chepstow with all possible expedition so as to bring our outlay into bearing. We had discovered the place, bought the property, secured our staff and establishment, planned, and in a great measure laid out our yard, and we had actually got orders from the Shipping Controller for two standard ships, which were to be laid down as soon as our slips were ready. In July, 1917, an officer of the Government Shipbuilding Department accepted an invitation to pay a visit to Chepstow to see the progress we were making with our yard. We hoped that we might enlist his sympathy in our enterprise. He inspected the yard, expressed himself delighted, returned to London, and in a few weeks' time we received notice that Government had acquired our yard, and that our order for standard ships was cancelled. I am afraid that unawares we entertained the reverse of an angel.

We are told in the official reply in the House on 17th inst. that Mr. Noel Peck has now been appointed to take charge of the shipbuilding at Chepstow. I have known Mr. Peck for years. He has built many satisfactory ships for me. The Government could not have a better man. But I think it would have been more in the national interests had he been allowed to carry on the excellent work he was doing in Barclay, Curle's yard on the Clyde, leaving

our manager to proceed with Chepstow, which was his own child. From a small adjoining yard, which we purchased some time after we bought the Chepstow property, we have already completed two steamers.

The official reply says that "the principal reason which influenced the Admiralty in taking over the yard was that the contractors could not get sufficient men on the work." Surely the Government could have given us some assistance in this way had they desired to do so, precisely as they have done in other yards. The reason given for turning us out of a yard which the Government had never thought of till we had brought it to practical maturity is, I submit, rather flimsy, especially when, as has been shown, in spite of Government having stepped in, berths No. 1 and No. 2 are apparently only ready now and not a keel has so far been laid down.

Why the Chepstow yard should have been taken over by the Government instead of being left to its owners and made a controlled establishment, as every other yard in the country has been, remains a mystery.

I take no part in politics. My seat in the House of Lords, until I am expelled, ought to be on the cross-benches, but of this I am convinced: the less Government officials or quasi-Government officials are permitted to interfere with trade the better will it be for the country and for its financial stability. This country has acquired its wealth through the enterprise and the industry of its people. It is the wealth of the people that is enabling the country to carry on the war. There is an idea in some quarters that the Government, through officials, could with advantage to the community carry on the business of the country. No more fatal error could be conceived. No greater delusion ever took possession of the human mind.

In my letter of April 1 I gave a quotation from a recent speech of Mr. Asquith. Might I give a quotation from a speech by Mr. Balfour, to which I had the pleasure of listening on Thursday last at a dinner given by the Government to the Belgian commercial delegates? Mr. Balfour is reported to have said:—

"When you are dealing with an industry of a country, with its mines and other matters, and when you strip the whole of its fixed capital and everything which is necessary for the carrying on of its manufacturing industry, then indeed was committed an injury far deeper and far more difficult to heal. . . . A German order to subordinate officials had been found in which it was recommended that they were to rob and acquire all the raw materials of the country, if possible by confiscation, because that was the cheaper method of getting it. If, by any unlucky chance, that happened to be impossible, then the more costly method of paying for what they took might have to be submitted to. . . . He did not believe that cynicism has ever gone farther. We have heard, chiefly from the Germans, that might is right, and that after all morality is insignificant compared with the will to command and to dominate. As long as these are fine phrases in philosophical or semi-philosophical works we smile and tolerate them, but when it takes the form I have described I do not think that disgust can go farther than that aroused by methods like these."

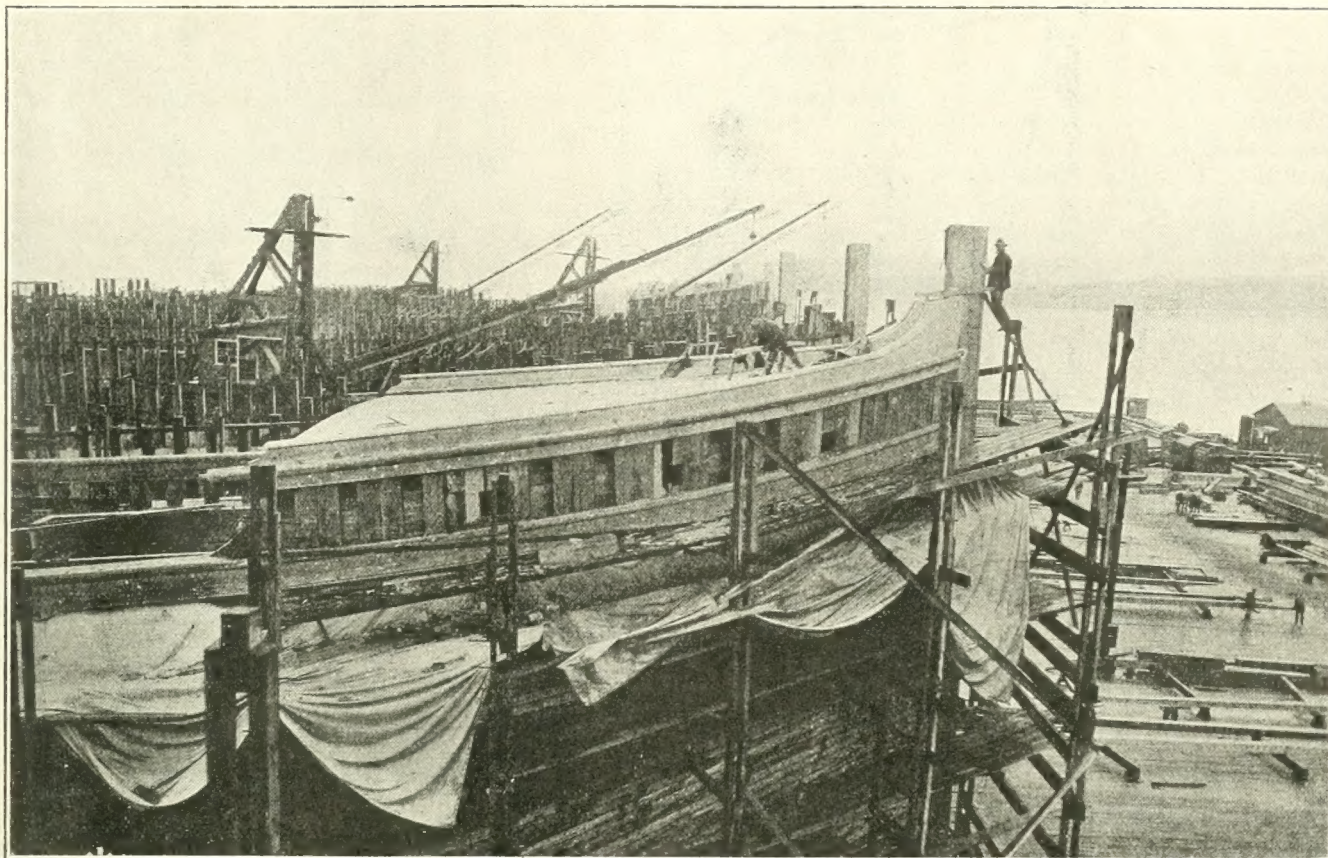
So far as Chepstow is concerned we have lost our yard, and we are not disposed to go on grumbling, but in the best interests of the country I think the disposition which is being so markedly evinced in some quarters to damp down all private enterprise and initiative ought to be curbed.

Two of our outstanding statesmen, Mr. Asquith and Mr. Balfour, are not in favour of unnecessary interference with the business organisations of the country. A very strong feeling is rising against it, and I venture to hope that our present Prime Minister, who is a fair-minded man, if he can spare a few minutes from his other arduous duties, will look into the whole position uninfluenced by bureaucrats and, if he sees fit, put his foot down.

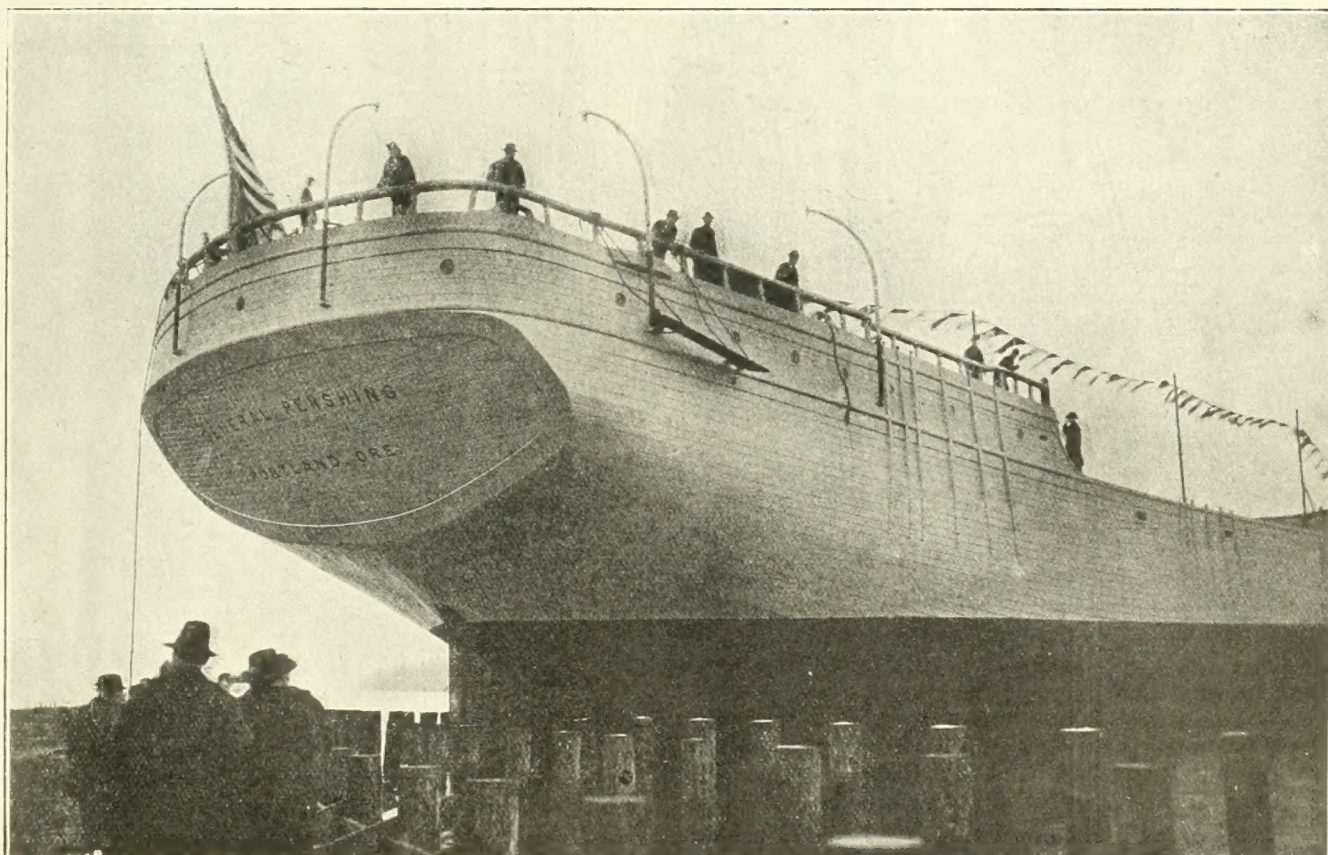
INCHCAPE.

SALE OF DANISH SHIPYARDS.—The United Steamship Company and the East Asiatic Company, both of Copenhagen, have jointly taken over the Copenhagen Floating Dock and Shipyards at Elsinore, Frederikshavn and Nakskov. The new company, which is called Nytt Dansk Dieselmotorværkt, is being formed with a capital of 10,000,000k.

AMERICAN WOODEN SHIPS.



An American Shipyard, showing Bows of Five Wooden Ships under Construction.



Copyright by Committee on

An American Wooden Ship immediately after Launching, showing the Counter. (See page 471.)

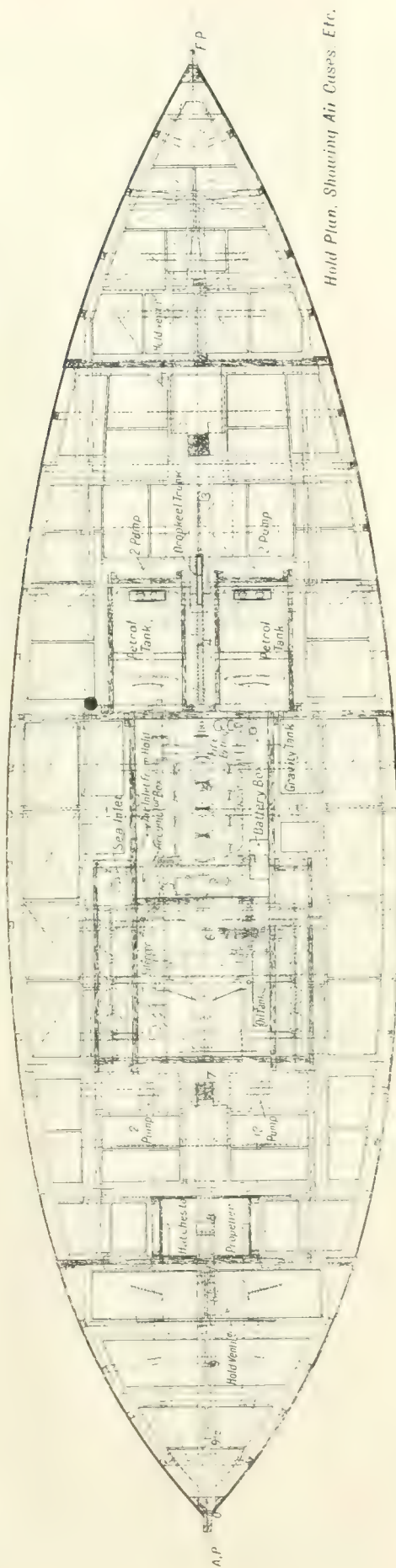
[Public Information, Washington, D.C.]

MOTOR LIFEBOATS OF THE ROYAL NATIONAL
LIFEBOAT INSTITUTION.

In 1904 the first motor was installed by the Royal National Lifeboat Institution in one of their lifeboats. That was an experimental undertaking for the purpose of ascertaining if the petrol motor would be serviceable for the propulsion of lifeboats under the exacting conditions of their service. At that time, it will be realised the marine petrol engine was in a very undeveloped state, and was hardly suitable for serious and continuous service. But this early effort had an advantage; it pointed out the weaknesses of the various details of installation. Therefore, when the next motor installation was put in hand—the boat is now at the Walton-on-Naze station—the Institution's officers knew in which direction they were likely to find trouble, and they did what they thought best to anticipate these troubles. To a very great extent they were successful. This boat has done excellent service for a number of years, and during this war has been called out a great many times. Her last service was the rescue of the passengers and crew of the *Peregrine*, totalling about 80 people. A perusal of the records of this boat indicate that the difficulties, weaknesses, and failures encountered, are not attributable to the motor itself, the accessories and the methods of its use proving to be the weak links of the chain. In those days it had never occurred to makers that pumps and magnetos should be driven direct by the engine. They were in consequence bolted to any convenient bracket and driven by a chain. This chain drive has been mainly responsible for the few breakdowns this boat has experienced.

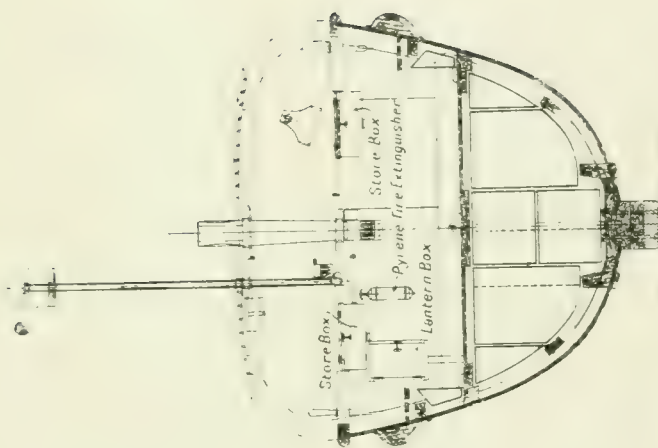
When it had been demonstrated that it was advisable to go a step further and build special motor lifeboats, several engineering firms were invited to co-operate. Finally, J. Tylor & Sons were selected, and they designed a motor to comply with the specification prepared by the officers of the Institution based on the previous experience they had obtained on their four experimental boats. The engine that was then evolved has now been standardised, being modified as far as necessary to keep pace with the development of this branch of engineering. While, therefore, the engine gives the appearance on general inspection of being somewhat old-fashioned in design, closer observation will disclose the fact that as regards essential details it is quite abreast of the times. The engine is termed a four-cylinder "T" headed engine with separate cylinders, forced lubrication, with low tension ignition, the crank case, &c., being constructed of bronze. A reference to the drawing that we publish of one of the latest motor lifeboats of the self-righting type will show that the engine is fitted with separate switches for each cylinder, so that any cylinder can be turned off for trial purposes. A governor is arranged actuating a separate throttle, the function of this governor being to throttle down the engine should the propeller leave the water in a bad sea, or when the boat is bumping over the sand, as is often the case in the Thames estuary, or the East Coast. It will also be seen that the magneto is carried fairly high up on the engine and is direct-driven and well enclosed. The diameters of the cylinders of the 40 h.p. engine are 5½-in. bore by 6½-in. stroke, and this engine is arranged to run at a speed of 850 revolutions. A larger type of engine, the 60 h.p., is on the same lines, but has cylinders 6½-in. bore by 7½-in. stroke. It is a slower engine, running at 700 revolutions. There is a smaller engine still of 35 h.p., used for a lighter form of boat. Engines of this type are not numerous.

In the installation of these motors considerable care has to be taken to guard against water and general dampness, and reference to the drawings will show that the engine is located in a bulk-headed watertight compartment which is lined with sheet copper having soldered seams. Over the compartment is arranged a substantial watertight hatch, provided with rubber water seals. Therefore, this motor compartment is watertight in every way. The boat's hold might be full of water, without any finding its way into

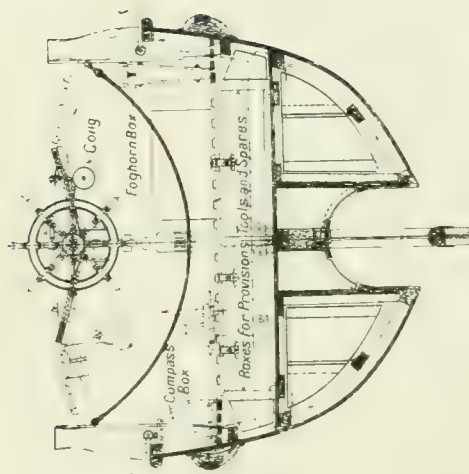


40-ft. Motor Lifeboat (Self-Righting Type) of the Royal National Lifeboat Institution.

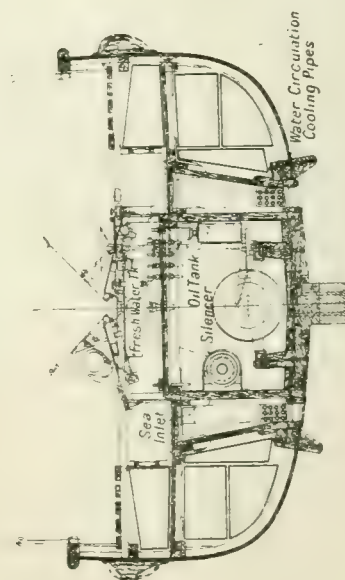
Hold Plan, Showing Air Cases. Etc.



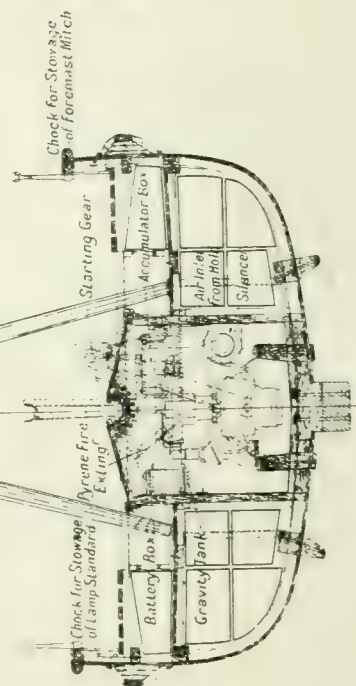
Section at Fore Endbox Bulkhead
Looking forward.



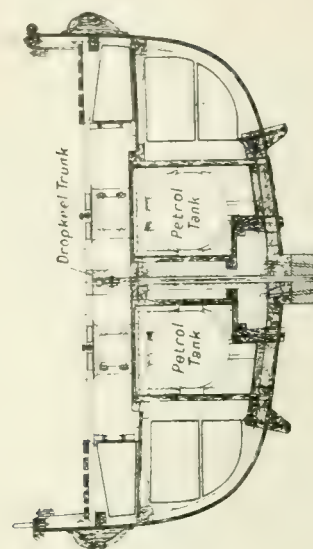
Section at Aft Endbox Bulkhead.
Looking Aft.



Section at No 4 Station
in way of Petrol Tank Compartments.
Looking forward.



Section at No 5 Station
in way of Motor Compartment
Looking Aft.



Section at No 6 Station
in way of Reverse Gear Compartment
Looking forward.

Cross Sections of 40-ft. Motor Lifeboat, Self-Righting Type.

the engine compartment: or the whole vessel may be submerged by a heavy sea and the motor yet remain dry.

Air is supplied to the engine by a pipe leading from the compartment to the after-end box. This pipe passes through the deck and terminates about half-way up the end box; while there is on the bulkhead a valve which closes should the boat capsize. The air passes into the end box and from thence through the pipe to the motor compartment. Any water that finds its way into the end box is drained from same by a drain plug.

The exhaust passes through water-jacketed silencers, and is carried overboard on either side by a thwart-ship pipe under one of the thwarts, arranged with two stop-cocks so that it can be closed when the boat is at moorings, or when under way the weather outlet can be closed to prevent the fumes blowing back on to the boat.

The petrol arrangements are duplicated for the sake of security. There are two petrol tanks, and two complete and separate petrol systems. In case of a leak, or failure of the air, or any mishap to one of the tanks, the other can be brought into use without opening the engine hatch by simply manipulating cocks arranged for the purpose. Besides the duplicated system a small tank is located in the engine compartment called the gravity tank. This is always kept full of petrol and can be brought into play by turning on a cock; the object being to provide a stand-by should the air-pressure fail, and so keep the engine running for sufficient time to rectify the fault. The petrol tanks are cylindrical with domed ends, made of stout hard-drawn copper with seamed joints, and tinned inside and out; while, as an extra precaution, the outsides of all the tanks are stove enamelled. Each tank is securely clamped by chocks lined with felt in a small compartment by itself. This compartment is copper-lined and has a watertight hatch, being absolutely sealed from the rest of the boat or the engine. These tanks being as low as possible in the boat, air-pressure is used to force the petrol up to the carburettor. This air is obtained from a small automatic valveless pump, driven by a cam, on the main cam shaft of the engine. This pump is automatic as regards pressure. It will never exceed the pressure it is set to pump to. Besides this, there is a hand pump which can be used at once, and is always used to pump up initial pressure.

SAND TROUBLES.

Next in importance is the circuit for the cooling water. The earliest troubles experienced by the Institution with motor life-boats can all be written around the word "sand." In a gale of wind, the sea in the neighbourhood of the sands on the East Coast contains a very large proportion of ordinary coarse-grained sand. If the water is used direct from the sea, this sand is deposited in the water-jackets of the cylinders and the jackets of the pipes, and it also causes extensive wear to the rotary pump. On occasions the sand that has reached the pump has been so coarse that the pump has jammed, and the chain broken. Therefore, to eliminate this trouble a closed fresh-water circuit is employed. There is a small tank containing fresh water, located as high as possible in the engine case. This is a feeder tank for making up any loss, and a pipe from same branches into the main circuit. The main circuit passes from the engine to multitubular coolers located in the relieving wells on each side of the boat. These wells and the coolers will be noted in the drawings. The water, after passing through one of the coolers, crosses the engine compartment by a pipe, and from the cooler it passes to the pump, and again to the engine. There are also two cocks placed in the circuit, one at the delivery and one at the suction. These cocks are arranged so that, if necessary, in case of failure of the fresh water supply, or for any other purpose, the closed circuit can be cut out, and the engine run on the sea water, this being a stand-by arrangement.

The lubricating oil is also cooled when it leaves the engine. This is essential in an installation of the kind, where an engine may

be run for five or six hours on full load, enclosed in a compartment which can have no cooling effect, with the result that the temperature of the oil may rise to such a degree that the lubricating properties of the oil would be considerably curtailed. Therefore, the oil from the forced lubrication pump is passed through a multitubular cooler, and then delivered to the engine at a temperature somewhere about 75 deg. F. instead of perhaps 150 deg. F.

In order that the oil service may be made up during a long run, an oil reservoir holding about four gallons is installed. There is a semi-rotary hand pump located in the engine compartment, with a handle carried to the outside, connected with a distribution valve enabling the driver to pump oil from this store tank, direct to the crank chamber of the engine, to a syphon lubricator which feeds the reverse gear, and to the stern tube.

POWER TRANSMISSION.

We now come to another very important part of the mechanism, namely, the power transmission details, which deliver the power generated by the engine to the propeller. In a boat "working" continually as these boats must do in a heavy sea, some flexible connection between the engine and reverse gear is advisable if not necessary. After trying various universal joints, the Institution finally decided upon a flexible drive, consisting of a large disc of oil-proof rubber and canvas, bolted across the face of the flywheel and provided with bolt holes in the centre, to which is coupled the flange of the reverse gear. This provides a drive that is flexible and allows a certain amount of end play. It is rigid as far as the transmission torque is concerned, and is quite silent, and has no wearing parts. The disc being moulded in one piece has an unlimited life. The reverse gear, which is of the Gardner type, is coupled direct to the tail shaft, which is made of bronze, carried in a bronze stern tube designed by the Institution. The stern tube is kept full of oil, and there is a small tank placed high up on the drum head which provides a hydrostatic pressure to overcome the pressure of the water, in the case of the packing leaking. The bearings of this stern tube are bronze bushes lined with white metal, which are renewable at once if required. The packing simply consists of a moulded oil-proof rubber ring which is securely held by a locking cap and provides an unadjustable packing.

The propeller aperture in the deadwood is enclosed in a very substantial bronze frame. A boss is formed on this, and the stern tube flange bolts on to this boss. Screwed on to the stern tube is a heavy sleeve which is bored to receive the boss of the propeller, this boss being parallel for a very considerable distance.

MANŒUVRING.

The manipulation of these engines by the motor mechanic has been reduced to as simple a form as possible. Apart from such matters as lubrication, petrol supply, &c., the actual manipulating gear consists of a bronze wheel which actuates the reverse. A quarter of a turn of this wheel to the right puts the gear into the ahead position; a quarter to the left puts it astern. The effort required is very small, and as the clutches of the gear are of the expanding and contracting type it will be realised that the time occupied to go ahead or astern is very short. In fact, the propeller can be moved from stop to ahead, and then astern, and then to stop, in one second. There is a throttle lever, a substantial affair 8 in. long, so that a very fine regulation of the engine can be obtained, often very essential when in company with another boat. However, in order to eliminate the manipulation of this throttle when the reverse gearing is being actuated, there is an automatic arrangement which consists of a cam mounted to the spindle of the reverse gear in such a manner that when the reverse gear is placed in neutral the throttle is closed, the engine continuing to run slowly by a carburettor bypass which can be permanently set for any suitable speed. Immediately the reverse gear is brought into action, the throttle is again opened, and in consequence the engine always picks up the load immediately it is applied, and never races when the gear is put in neutral. The hand throttle under these circumstances simply determines

the extent to which the carburettor throttle will open, when the gear is put ahead or astern.

With regard to the ignition of these engines, as mentioned above, it is on the low tension system, which has proved to be less susceptible to damp and water than the high tension type of ignition. The current is obtained from a low tension generator, either a magneto or what is known as a carlighting dynamo, and the coil box containing a change-over switch induction coil, &c., is arranged with the handle outside the engine room, so that the engine can be run or started from the generator, or from the stand by Alkhum accumulator which also provides the current for the inspection lamps. This accumulator is, of course, charged by the dynamo when the engine is running.

The bilge pump has a drive which can be put into operation at any moment. It is a powerful pump, sufficient to deal with any leaks likely to occur in the engine compartment. It is, of course, operated by the engine, but hand bilge pumps are provided for pumping out any part of the boat.

It should be noted that owing to the fact that the whole of the hold of these lifeboats is filled with shaped air cases packed closely together the boats are unsinkable, and during the trials of a new boat the hold is filled with water by opening the drain plug so that the boat is in effect stove in. The boat is then required to undergo power and capsizing trials under these conditions.

The whole of the fittings and details in connection with the installation of machinery in these lifeboats are standardised. The engines are all identical and are built to jigs in the usual manner. The reverse gear is in the same category, while the stern tubes, tanks, pipe connections, flanges, and in fact all fittings are made to gauge and jigs, so that all articles of the same class are interchangeable. This facilitates the purchase of materials for the installation of machinery, and the provision of renewals and spares, and of course incidentally greatly reduces the cost all the way round. A brief description of the Royal National Lifeboat Institution's standard 40 ft. self-righting motor lifeboat will be of interest.

40 FT. BY 10 FT. 6 IN. S.R. MOTOR BOAT.

The boat illustrated is of the Institution's self-righting type. She is 40 ft. long, with a beam of 10 ft. 6 in. The screw propeller works in a tunnel, so that it is well protected, and clearly shown in the drawings. The boat is provided with sails and oars, and an iron plate drop-keel or centre board is fitted ahead of the machinery compartment. The crew consists of 12 men, including the coxswain, second coxswain and bowman, motor mechanic and assistant motorman.

Air chambers are fitted at each end of the boat, and a watertight deck extends between the bulkheads of these chambers, with about 6 in. freeboard at the lowest part. Buoyancy air cases are fitted at the sides above the deck. Self-acting non-return relieving valves are fitted on deck, to discharge water breaking on board, through the bottom of the boat.

The whole of the space in the hold, below the deck, is fitted with wooden air cases, 97 in number, which give buoyancy should the boat be stove in. There are also 12 cases on deck. There are therefore 109 air cases in all, which is equivalent to the boat being built in 109 separate watertight compartments. The load displacement of the boat is just over 13 tons, and her speed is $7\frac{1}{2}$ knots per hour. A higher speed would be of little value to a lifeboat of this size, and other qualities have to be provided which are of more importance than high speed.

The stability of the self-righting lifeboat has been carefully investigated, and additional experiments are frequently carried out.

The keel is of Canadian elm, with a cast-iron keel below, weighing $2\frac{1}{4}$ tons. The stern post, deadwoods and aprons are of English oak grown to form. The skin planking is of tough Honduras mahogany in two thicknesses, both worked diagonally at an angle of approximately 45 deg. with the keel; the planks crossing one another at right angles in the body of the boat. Stout unbleached calico, thickly coated with white lead, is placed

between the two skins, which are fastened together with closely spaced copper nails, clinched inside on copper roves or washers.

The frames are of bent Canadian elm. The deck is laid in hatches, made of two thicknesses of mahogany, screwed down, so that they can be easily taken up to remove the air cases in the hold.

The air cases are made from selected white pine, protected from rot by coating them inside with jodelite. The outsides are covered with stout unbleached calico, ironed on with marine glue specially prepared for the purpose. Further particulars of the construction of the self-righting lifeboats will be found in a paper read by Mr. J. R. Barnett at the meeting of the Institution of Naval Architects in March, 1910.

LIFEBOAT WORK.

In conclusion a few particulars of the work of the lifeboats during the war may be appended.

The year 1917 has created a new record in the history of the Institution for the number of lives saved—1,156 by lifeboats and 192 by shore boats, making a total of 1,348; and the following figures give a summary of lifeboat work since the outbreak of war to December 31, 1917:—4,180 lives have been rescued from ordinary casualties; 1,372 lives rescued from war casualties (included in above); while the lifeboats have been launched 1,352 times to ordinary casualties, and 396 times to war casualties.

Up to December 31, 1917, nearly 150 vessels and boats have been saved—a fact having a vital bearing on our food supplies and the transport of raw material. Moreover, during the winter months the lifeboats have been constantly launched to vessels mined or torpedoed. Never has the work of the Institution been more constant, and of greater value to the nation, and humanity. It would be difficult to exaggerate the importance of the war services which the lifeboats have rendered to the nation in spite of immense difficulties, due to the impossibility of completing important motor lifeboats; also to the withdrawal of the younger members of the crews, so that the average age of the crews is now well over 50, while the work is more arduous than ever.

MAKING THE ALLIES PAY.

Herr Direktor Huldermann writes confidently in *Hamburger Fremdenblatt* concerning the peace problems and war aims of German owners. Expressed in its briefest form, his opinion seems to be that German owners are in straits, if they cannot secure direct indemnity from us and our Allies. A few of his statements follow:

"The German merchant fleet has lost about two-thirds of its tonnage, and to make good this loss will require expenditure far exceeding the original cost of the vessels. The Reconstruction Act might seem to alleviate the position of shipowners, but in reality it adds nothing to their assets. Owners are left to add large—sometimes very large—sums to the State grants, and the replacement vessels will generally not be available until freights have fallen. The high cost of the vessels will then make it impossible either to sell them at a profit or to operate them to advantage under the reduced freights. Receipts from the few vessels available immediately after the war (i.e., the residual third of the pre-war fleet) will not suffice to place owners on a sound economic footing. The most promising means of meeting the great need of German shipowners for capital is to require full indemnity from the enemy for all lost vessels.

"The first essential to this is a discerning peace, viz., one which secures these indemnities and in addition full freedom for trade and commerce and the basis for a reconstruction of world traffic (!) Without an economic *status quo*, infinitely much that has been gained for trade and shipping by long and strenuous labour is lost. We have in the West, East, and South-east of Europe such great and valuable securities that the requisite peace can be secured if our negotiators know their business. The Reconstruction Act is doubtless of great national value, but it is not a panacea to shipowners. The enemy must pay the cost of our new fleet."

SCREW PROPELLERS.

The previous articles* on this subject have dealt with Taylor's and Curtis and Hewin's experimental data and have shown how the dimensions of propellers to fulfil specified conditions can be obtained therefrom. It is now proposed to refer briefly to Froude's 1908 propeller results.

In 1886 R. E. Froude read, before the Institution of Naval Architects, a paper on "The determination of the most suitable dimensions for screw propellers." This contribution contained the results of the first series of methodical experiments on model screws. Owing to the limits of these experiments, the scheme not being sufficiently comprehensive to include more modern cases as they arose, further work was undertaken. In due course the paper, "Results of further model screw experiments," followed, which was read before the I.N.A. in 1908. The model screws tried in these later experiments were greater in diameter than those experimented upon in connection with the 1886 paper, and the field of experiment was wider, including practically all possible variations in pitch and in surface.

EFFECTIVE PITCH.

In Taylor's and Curtis and Hewin's results it is seen that at zero slip a positive thrust is recorded by all the model screws. It is against all theory and reason that a screw can produce positive thrust when the speed of advance exactly equals pitch $\times$ revolutions. Accordingly, the face pitch of a propeller is not the real pitch, for the pitch of the back of the blade differs from that of the face, and the complete or effective pitch differs from both. Froude found that if he assembled the curves of thrust with a common starting point, a formula could be devised, from which it would be possible to calculate the thrust potentialities of any propeller, given the pitch ratio, type, and blade width proportion. This starting point—the zero thrust—corresponded to a certain number of revolutions of screw, with a certain definite speed of advance,

so that pitch = $\frac{V}{R}$, where V = speed of advance in feet per minute, and R = revolutions of screw at point of zero thrust. This gave the complete pitch of the screw, which complete pitch has also been termed the "analysis" or "effective" pitch.

METHOD OF PRESENTATION OF RESULTS.

Besides giving a formula by means of which the thrust, for given speed of advance and revolutions of screw, could be calculated, Froude presented the results obtained in curves of C_A and C_o (Fig. 25):—

$$C_A = \frac{R \cdot H}{B V^3} \text{ and } C_o = \frac{H}{B D^2 V^3}$$

where R = Revolutions of screw in hundreds per min.,
 H = Thrust horse-power per screw,
 B = Blade factor,
 V = Speed of ship in knots corrected for wake,
 D = Diameter in feet.

THRUST HORSE-POWER.

In Taylor's work the power factor in the formula presented by him was the power absorbed by the screw, in Froude's the H equals the power given out by the screw. In initial work the former is more easily obtained than the latter.

In Froude's 1886 paper on "The determination of the dimensions of screw propellers," it is stated that the effective horse-power equals the thrust horse-power when the hull efficiency equals unity; i.e., $E.H.P. = T.H.P.$ when $He = 1$.

When model experiments have been run the $E.H.P.$ is known. An allowance having been made for the resistance of the appendages, the total $E.H.P.$ is arrived at.

Where—

$E.H.P.t$ = Total effective horse-power (per screw),
 $H = T.H.P.$ = Thrust horse-power (per screw),
 $I.H.P.$ or $S.H.P.$ = Indicated or shaft horse-power (per screw),
 Ee = Mechanical efficiency of the engine,
 Pe = Propeller efficiency,
 He = Hull efficiency;

then

$E.H.P.t$ = $I.H.P.$ or $S.H.P. \times$ Propulsive efficiency,
 = $I.H.P.$ or $S.H.P. \times Ee \times Pe \times He$,

and H or $T.H.P.$ $E.H.P.t$ $I.H.P.$ or $S.H.P. \times Ee \times Pe$.
 He

The H , or thrust horse-power, can therefore be arrived at by multiplying the power developed by the efficiencies of the engine and propeller, or by dividing the total effective horse-power by the hull efficiency value. The latter method requires tank guidance, which few possess. The former is open to objection owing to the fact that an estimate must be made of the propeller efficiency before the real slip is known.

SLIP.

The slip of a screw is usually stated on a basis of face pitch. The pitch of the swept-up surface is known, whereas the effective pitch can only be approximately determined. The slips therefore given in Froude's curves are not comparable with those usually referred to. It occurred to the writer that it would be possible by

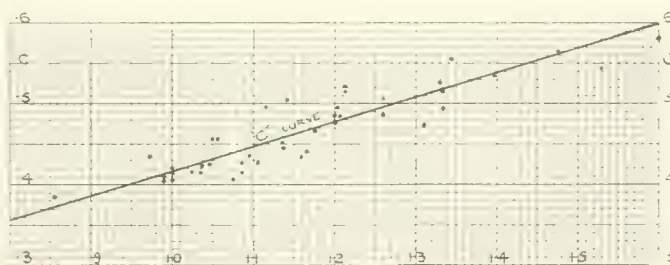


Fig. 24.—Base of Pitch Ratio.

Values of c where c I.H.P. or c S.H.P. = H .

a method of trial analysis to arrive at power factors which would enable (a) the thrust horse-power, or H , to be easily determined, and (b) to use the pitch ratios as given by Froude as if they were face pitches. From this analysis it was found that if the $I.H.P.$ per screw, in reciprocating machinery, and the $S.H.P.$ per screw, in turbine work, be modified as stated below, the H value can be easily ascertained.

The values are as follows:—

Single-screw steamers, 4-bladed screws: $H = I.H.P.$ per screw $\times .42$.

Twin-screw steamers, 3- and 4-bladed screws: $H = I.H.P.$ per screw $\times .50$.

Twin-screw geared turbine destroyers, 3-bladed screws: $H = S.H.P.$ per screw $\times .55$.

The value c , where c I.H.P. = H , really varies with pitch ratio, and those given above, associated with single- and twin-screw ships and twin-screw geared turbine destroyers, are definitely given because the average pitch ratio of propellers associated with these classes have c values as stated. Fig. 24 shows the values obtained by analysis plotted on a pitch ratio base. When the desired dimensions of a screw have been obtained, the problem ought to be again worked out if the pitch ratio adopted differs greatly from that associated with the c value originally chosen.

The information to hand regarding the results of triple and quadruple screw vessels is so contradictory that nothing can be done in the way of giving reliable values to use in design for these.

* See *Shipbuilding and Shipping Record*, Vol. X, July-December, 1917, pages 55, 81, 223, 274, 464.

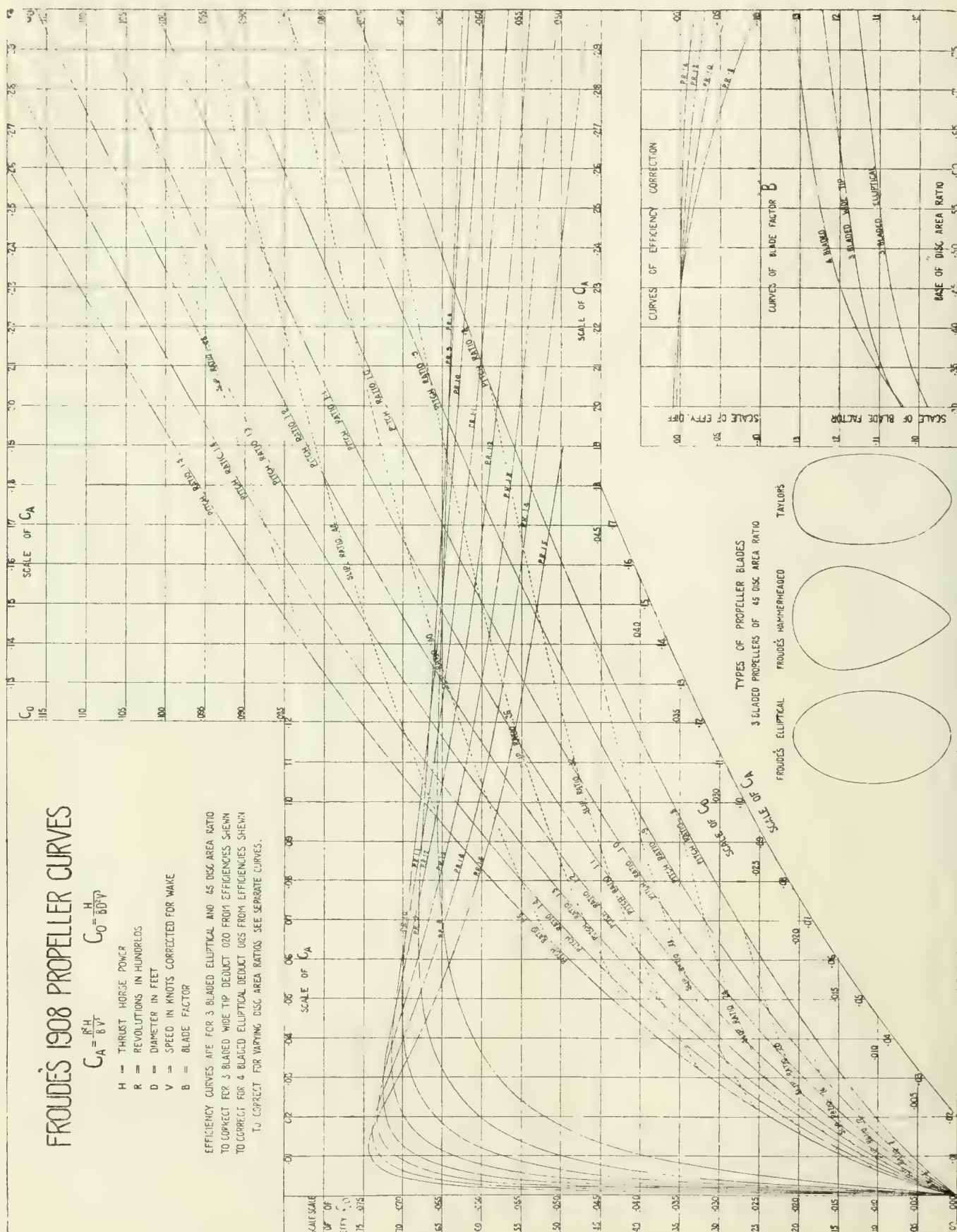


Fig. 25.—Curves of Efficiency Correction.

POINTS TO OBSERVE IN DESIGN.

The following points must be noted in design:—

- (1) The efficiency curves are for 3-bladed elliptical propellers of .45 disc area ratio.
- (2) For 3-bladed wide-tip propellers, deduct .02 from efficiencies shown.
- (3) For 4-bladed elliptical propellers, deduct .025 from efficiencies shown.
- (4) To correct for varying disc area ratio, see curves of efficiency correction.
- (5) For values of "B," see separate curves of same.
- (6) The wake values to use are as given in Mr. Luke's 1917 paper (see page 274, Fig. 13, *S. & S.R.*, Sept. 20, 1917).
- (7) The approximate diameters are chosen from Figs. 1, 2, 3, 4, *S. & S.R.*, July 19, 1917.
- (8) The appropriate developed area is determined from Fig. 6, *S. & S.R.*, July 26, 1917.
- (9) The actual expanded area must be increased by about 20 per cent. when calculating the disc area ratios to use with these curves, as Froude included the area cut off by the boss in his estimate of surface.

EXAMPLES OF DESIGN.

Case (a), single-screw steamer:—

Number of blades	4.
Indicated horse power	2,150.
Speed of ship in knots	11.
Block coefficient	.78
Appropriate wake fraction (Fig. 13)	.42
Speed, corrected for wake	7.75.
Approximate diameter (Fig. 2)	18 ft.
Appropriate expanded area (Fig. 6)	100 sq. ft.
Revolutions per minute	65.

Then

$$\begin{aligned}
 H &= 2150 \times .42 = 900. \\
 R &= 65 \quad .65 \text{ and } R^2 = .422. \\
 B &= .121, \text{ approximate D.A.R. being } \frac{121}{18^2} = .7854 = .47. \\
 V &= 7.75 \quad V^3 = 465 \quad V^5 = 27,900. \\
 R^2 H &= .422 \times 900 = 379.8 \\
 CA &= \frac{BV^3}{R^2 H} = \frac{.121 \times 27,900}{379.8} = .112.
 \end{aligned}$$

At $CA = .112$ the pitch ratio of maximum efficiency is unity. Take off the Co values, therefore, at .9, 1.0, and 1.1 pitch ratios.

Co	H $BD^2 V^3$	D	H $Co BV^3$	In this case $D^2 = \frac{900}{Co \cdot 121 \times 465} = Co$	Pitch.	D.A.R.	Efficiency corrected.*
.9	.0442	.362	19.0	17.1	.42	.647	
1.0	.0495	.323	18.0	17.1	.47	.646	
1.1	.0545	.295	17.1	18.8	.52	.630	

Case (b), twin-screw geared turbine destroyer:—

Number of blades	3
Shaft horse-power	14,000
Speed of ship (in knots)	36
Block coefficient	.55
Appropriate wake	.08†
Speed corrected for wake	37.1
Approximate diameter (Fig. 4)	9.4 ft.
Appropriate expanded area (Fig. 6)	5.4 sq. ft.
Revolutions per minute	590

Then

$$\begin{aligned}
 H &= 14,000 \times .55 = 7,700. \\
 R &= 360 \quad 3.6 \text{ and } R^2 = 13. \\
 B &= .126, \text{ approximate D.A.R. being } \frac{60}{9.4^2 \times 7854} = .865. \\
 V &= 37.1 \quad V^3 = 51,000 \quad V^5 = 70,000,000. \\
 R^2 H &= 13 \times 7,700 = 100,100 \\
 CA &= \frac{BV^3}{R^2 H} = \frac{.126 \times 70,000,000}{100,100} = .01135.
 \end{aligned}$$

* * Efficiencies corrected for number of blades and disc area ratios. Dimensions of propeller adopted, 17 ft. 10 in. diameter; 18 ft. 2 in. pitch; 100 sq. ft. expanded surface.

† Adopt 3 per cent. negative wake in destroyer design.

‡ 3.6 sq. ft. per 1,000 P.H.P.

At $CA = .01135$ the pitch ratio of maximum efficiency is 1.5. Take off the Co values, therefore, at 1.3, 1.4 and 1.5 pitch ratios.

Co	H $BD^2 V^3$	D	H $Co BV^3$	In this case $D^2 = \frac{7,700}{Co \cdot 126 \times 51,000} = Co$	Pitch.	D.A.R.	Efficiency corrected.*
1.3	.0139	.922	9.8	12.46	.826	.59	
1.4	.0145	.878	9.8	12.74	.82	.68	
1.5	.0158	.819	8.7	13.55	.80	.67	

AREA OF PROPELLERS.

None of the experimental data on screw propellers give any data as to the actual amount of surface which must be given. In high-speed vessels the question of cavitation comes into consideration and determines the least possible area which can be assigned. The majority of vessels have screws of small disc area ratio and yet are in no danger of approaching the cavitating pressures. As a guide to the area to adopt the curves on Fig. 6 should be followed, as these have been obtained as the result of plotting the expanded surfaces of numerous propellers. The developed area adopted in Case (b) is in excess of that necessary to avoid cavitation, but it is the present practice to allow plenty of area, so that should the power developed exceed that anticipated, there should be no fear of the propellers breaking down.

Another point which probably influences the adoption of large area in geared turbine destroyer propellers is that the efficiencies of screws of high pitch ratio seem to be affected only very slightly by increase in area. This point is clearly brought out in the curves of efficiency correction shown on Fig. 25.

TAYLOR AND FROUDE'S CURVES COMPARED.

To those who have been in the habit of using Taylor's 1904 experimental data, Froude's curves offer no inducement to depart from their practice. Both sets can be used with a degree of accuracy provided the proper basis has been found to correlate the experimental curves with actual practice. The great point is to become thoroughly acquainted with one set by analysis of trial results and use that set only in future design.

AMERICAN WOODEN SHIPS.

We published last week two photographs showing the American wooden ships in process of construction. We reproduce on page 463 two further photographs dealing with this interesting subject, which have been published by the American Committee of Information and issued in this country by the Topical Press Agency. The first photograph shows a number of wooden ships under construction in the yard of the Sloan Company at Olympia, Washington, and the second, the *General Pershing*, which has been launched from the ways of the Ward Shipyard, also at Olympia, Washington. In the latter picture, it is interesting to notice that the stern of these vessels follows very nearly the lines adopted in wooden ship construction 40 or 50 years ago.

"BEAT HAND" IN SHIPBUILDING. Blyth County Court judge recently gave judgment for the respondent company in the action which Jas. Wilson brought, under the Workmen's Compensation Act, for compensation for disablement from the Blyth Shipbuilding Company, Ltd. The action was of some importance from a legal point of view. The claimant had been acting as a riveter's holder-up for the past two years. He contracted a "beat hand"—a benumbed condition of the hand—last October, through, it was contended, the nature of his employment, and it was contended that "beat hand" was an industrial disease. Respondents denied liability and contended that industrial diseases only applied to employments mentioned in the schedule and that shipbuilding was not one of them. It was stated that, whatever the decision, the side defeated intended to test the case in the Appeal Court.

* Efficiency corrected for type of blades and disc area ratios. The propellers actually adopted varied from 9 ft. diameter and 12 ft. 9 in. pitch to 9 ft. 6 in. diameter and 12 ft. 6 in. pitch.

GENERAL NEWS SECTION.

PERSONAL.

Mr. Harry Tuck Sherman, of Maine, U.S.A., has been appointed Vice-Consul for the United States in London.

Mr. Wm. Margrave, coal exporter, Swansea, who died February 23 last, left estate of the gross value of £20,983.

Captain Sidney A. Lewis, who has been appointed to the command of the Royal Defence Corps at Cardiff, is a partner in the firm of Simpson, Holdaway & Co., shipbrokers, Cardiff.

Information was received last week that Lieut. Ebenezer Maclay, of the Scots Guards, was shot by a German sniper, and died on April 11. Lieut. Maclay was the eldest son of Sir Joseph Maclay, Bart., the Controller of Shipping, and had been on service since the outbreak of the war. As an officer of the Scottish Rifles he fought through the Gallipoli campaign, and was the only one of a gallant band of twenty-five who returned safely after scaling the heights. His younger brother, Lieut. William S. Maclay, who served in the same regiment, died of wounds. Sir Joseph Maclay's third son is in the Royal Air Force, and the fourth is still at school.



The late Lieut. Ebenezer Maclay, Eldest son of Sir Joseph Paton Maclay, Bart.

In North-East Coast ship-repairing circles deep regret was expressed at the news that Lieutenant Ralph Eustace Smith, R.F.C., had been killed. He had been specially mentioned for good work as an observer. Lieutenant Smith was a director of Thos. & Wm. Smith, Ltd., and of Smith's Dock Company, Ltd., North and South Shields and Middlesbrough.

The death has taken place at his residence, Sunderland, of Mr. Hugh Pantou, in his 78th year. For a quarter of a century he was secretary of the Wellesley training ship at North Shields.

Mr. John Macdonald, late chief officer of the steamship *Baruta*, was presented last week, at the Marine Board offices in Glasgow, with Lloyd's silver medal and certificate for meritorious services connected with the salving of the sailing ship *Ainsdale*.

Mr. G. W. Harrup, the chairman of the Imperial Navigation Coal Company, Ltd., having disposed of his interest, has resigned his seat on the board. Mr. H. Seymour Berry has been appointed Chairman of the company, and Mr. D. R. Llewelyn has become a Director.

Captain Joseph Frederick Sawle, who died at Cardiff on April 17, in his 73rd year, was a well-known figure at Cardiff Docks, where he came in 1872 and entered the services of C. O. Young & Christie. Later he was for many years in the American and Cape trades, commanding steamers of Glasgow owners. Captain Sawle was a native of St. Mawes, Cornwall.

Mr. J. E. Anderson, whose resignation from the Mersey Docks and Harbour Board was announced at last Thursday's meeting, was first elected in the year 1892. For three years he was chairman of the Pilotage Committee, but it was principally to the affairs of the Marine Committee, of which he has been chairman for the past 13 years, that he more particularly devoted his attention. During his chairmanship many very important improvements were introduced, among them the building of the giant dredger *Leviathan*, which lifts 10,000 tons of sand in an hour, the greatly improved lighting of the channel approaches to the port, and the revetment of the main channels.

The first publication of the death of Captain S. H. Dodd, marine superintendent of the Cunard Steamship Company, was made last week by Sir Alfred Booth, Bart., at the annual meeting. Captain Dodd it seems was sent on a Government mission abroad, and he was drowned owing to the steamer on which he was travelling being torpedoed by an enemy submarine. Sir Alfred Booth said the company would feel Captain Dodd's loss very keenly, for the late marine superintendent's influence extended far beyond the confines of his own department. Captain Dodd was 54 years of age. He joined the Cunard service in July, 1894, and became marine superintendent in the year 1902.

The death has occurred in London, of Mr. James MacCunn, at the age of 78 years. He was a son of Mr. James MacCunn, of Thornhill, Greenock, a large owner of sailing ships. Mr. James MacCunn founded the Baron Line of steamships, registered at Greenock, and when the James Watt Dock was opened in 1866 he was appointed traffic agent to the Greenock Harbour Trust. Whilst holding that appointment he published a pamphlet wherein he outlined a scheme for amalgamating under one control all the harbours of the Clyde from Glasgow to Rothesay, but it was not favoured by the authorities concerned. Mr. James MacCunn was the father of the late Mr. Hamish MacCunn, the composer.

PORT NOTES.

Newhaven.—An Admiralty Notice to Mariners (No. 469 of 1918), published in the *London Gazette*, warns mariners as to the extinction of lights and notifies new regulations for merchant vessels at Newhaven, to which entry is prohibited to all merchant ships other than those on Government Service, and those which have previously obtained special permission to enter from the Senior Naval Officer at Newhaven.

Sydney.—The Western Channel is being deepened to 40 ft. at low water, and in the near future it will be available for inward-bound vessels. It will provide an almost straight run in from the heads. The Eastern Channel will then be used for outward-bound vessels only. When the work of deepening is completed, the port will occupy an almost unrivalled position in possessing separate incoming and outgoing deep ship channels. The new wharves and jetties erected by the Harbour Trust range in length from 500 ft. to 1,140 ft., and up to 208 ft. in width. The depth of water at the wharves ranges from 30 ft. to 50 ft.

Bombay.—The report of the Bombay Port Trust for the official year 1916-17 states that the number of steam and square-rigged Government and merchant vessels which entered the docks, or were berthed at the harbour walls and paid dues, are shown in the following comparative statement for the war period :—

Year.	Vessels entered Docks.		Vessels berthed at Harbour Walls.		Total.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1913-14	1,009	2,749,553	779	380,014	1,579	3,135,597
1914-15	1,296	3,801,227	800	400,000	1,886	4,201,227
1915-16	1,232	3,096,727	791	411,000	1,794	3,939,727
1916-17	1,583	4,226,911	729	400,000	2,312	4,626,911

Of the vessels which entered the docks, 97 were over 470 ft. in length and 99 between 450 ft. and 470 ft., as against 51 and 56, respectively, in 1915-16. Eighty vessels were detained in the stream for periods varying from 12 hours to 6 days for want of accommodation in the docks. In the case of 46 vessels the detention was for less than two days, and 34 vessels were detained from two to six days.

FROM OUR CORRESPONDENTS.

CLYDE DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Scottish Coal Exporters.—The annual report of the Scottish Coal Exporters' Association, which was submitted at the annual meeting of the Association held last week, shows that abnormal conditions have prevailed in the trade during the year as a result of the war. The directors have, however, been active in their efforts to conserve the interests of the trade. Sir D. N. Stevenson and Sir Richard Mackie were re-elected directors, and Sir Richard Mackie was appointed the Association's delegate on the Firth of Forth Coal Shipping Trade Joint Committee. Representatives were also appointed to the Scottish Committee for the Supply of Coal to France and Italy.

Shipyard Improvements.—Notwithstanding the pressure which exists for the delivery of new tonnage, Clyde shipbuilders are able from time to time to improve and extend their establishments with a view to increasing still further the output. Details of these improvements cannot now be given, but it is not too much to say that the end of the war will probably find practically every yard on the river better equipped and in a position to do a much larger amount of work than prior to the outbreak of the war. At a sitting of the Glasgow Dean of Guild Court last week permission was granted to a number of firms to carry out alterations on their premises.

Among the plans passed by the Court were those of the Fairfield Company, Govan, for making extensions to platers' sheds and the erection of new iron workers' and riggers' sheds; Harland & Wolff, Govan, to make extensions to their south platers' shed; and the Lloyd Royal Belge, Ltd. (Brys & Gylsen) to erect building at South Street, Whiteinch. The directors of Glasgow Sailors' Home were also empowered to make additions to their buildings at Queen's Dock.

Glasgow Quay Walls.—The Clyde Trustees are faced with a difficult problem in preserving intact their quay walls on the river front at Glasgow harbour. A further collapse, which took place last week, deprives the harbour for a time of some valuable berthage space and also shows that some of the older walls are in a rather unsatisfactory condition. It is only a few months ago that portions of the walls at Plantation Quay and Mavisbank Quay collapsed in a similar manner, and steps had to be taken to prevent the fall of other parts of the same wharves. The cause of the collapse is understood to be the deepening of the channel and the consequent lowering of the low water levels. The fall last week took place at Anderston Quay on the north side of the river, and the part which actually gave way is limited to about 120 ft. in length, extending backwards from the front of the wall to a distance of 15 ft. The portions which have now collapsed on the south and north sides of the river amount in all to about five berths. At present very little can be done to make the damage good owing to the difficulty of obtaining either labour or material.

Technical Literature.—A scheme has been inaugurated in Glasgow for the purpose of making available all the resources of the city in the way of technical literature so that progress in industries may be stimulated. There are in Glasgow a number of scientific and industrial institutions and organisations, many of which possess valuable collections of scientific works and other books of reference. Such an organisation is the Institution of Engineers and Shipbuilders in Scotland, whose yearly "Transactions" alone are of great value to students and those actively engaged in shipbuilding and engineering.

The promoters of the scheme which is now in progress are the Corporation of Glasgow, the Royal Technical College and fourteen societies and Institutions in the City. Catalogues are being prepared on different subjects, and already two of these have been issued dealing with "aeronautics" and "internal combustion engines." By this means nearly the whole of the technical literature in the city will be made available to those requiring it. The scheme is regarded, however, as a first effort in the direction of a far-reaching and economical plan for making readily available to those interested the widest selection of literature dealing with science as applied to the industrial arts.

NORTH-EAST COAST DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Speeding-up Shipbuilding.—Although it does not often come to the notice of the outer world, friendly rivalry among the workmen in trying to turn out the best work in the quickest time is fairly common. In demonstration of this, there was a surprise which evoked curiosity and interest among a party of visitors at a launch at the Hebburn Yard of Palmer's Company lately. Immediately the vessel left the ways, a start was made in laying the keel blocks for another ship, and this latter operation was well forward by the time the visitors departed. There are no idle berths nowadays, and the smart way in which a new keel follows a launch is proof of the genuineness of the effort which both the management and the men are everywhere making to get the most out of the yards.

Norwegian Chamber of Commerce.—A North-East Coast Local Standing Committee of the Norwegian Chamber of Commerce in London was successfully inaugurated in Newcastle. There were two influential gatherings of business men belonging to this country and to Norway, and helpful speeches were delivered by Lord Joicey, the president of the Newcastle Chamber of Commerce, and Mr. K. F. Knudson, a past-president of the Norwegian Chamber. For generations there have been close trading relations between the Tyne and Bergen and other of the Norwegian ports, and the volume of trade has been steadily developed. In these circumstances, when the Norwegians ventilated their scheme for a North-East Coast Committee to make larger and stronger the commercial ties which subsist between the two countries, they spoke to sympathetic ears, and the result has been that the new organisation, with its active representatives from the Tyne to the Tees, begins its work under the most encouraging auspices. The total membership of the Norwegian Chamber of Commerce in this country is about 900, of whom a third are British. Newcastle has begun with sixty members, and a strong committee of seventeen.

The Man-Power Act.—The members of the Newcastle Chamber of Commerce assembled in large numbers at a meeting called to discuss the Man-Power Act, the powers of which, as everybody knows, are very far-reaching. There was every support promised to the Government in carrying out the provisions of the measure, but some concern was naturally felt for the fate of the small businesses, a great number of which are always to be found on the fringe of the shipbuilding and shipping industries. The big concerns can weather a trying storm in commerce such as a terrific war provokes, because their means of substitution of labour are more diversified than in the case of the business which is run by a principal, and, say, a clerk or two. The Newcastle Chamber, while desirous that every available man should be got for the Army, is anxious that care should be exercised in the administration of the Act, so that as little disturbance may be caused to the delicate fabric of the small business as possible. To this end the following gentlemen have been appointed an Advisory Committee to work in co-operation with the local Tribunals:—Messrs. A. Munro Sutherland, E. W. Garbutt, J. E. Dawson, Ridley Warham, J. R. D. Bell, R. M. Glover, J. P. Clarke, D. T. Hobkirk, H. Strachan, J. T. Steel, M. M. Mein, J. W. Witherington, J. J. Anderson, and R. J. Thompson.

Ferro-Concrete Ships.—There was a valuable discussion at a general meeting of the North-East Coast Institution of Engineers and Shipbuilders, in Newcastle, on Mr. T. J. Gueritte's paper on Ferro-Concrete Ships, read before the Institution in March. All the speakers testified to the fair way in which Mr. Gueritte, who is an acknowledged authority on concrete work, set forth the disadvantages as well as the advantages of ferro-concrete material for ships as compared with steel construction. In the matter of cost, running charges and earning power, there does not appear to be very much between the two types of vessels, and while there is a general belief that the ferro-concrete craft will be serviceable up to a certain tonnage for coasting and river work, there is undoubted curiosity to know how a 5,000-ton concrete ship would behave on an ocean voyage, say, an Atlantic winter trip. The question of stresses in a heavy sea occupied a good deal of attention in the discussion, and in this connection possible cracking of the concrete and the matter of tensile strength came in for consideration. So far as is now known, it is possible to build steel vessels quicker than those of ferro-concrete, and it would seem that unless present experiments reveal still greater advantages for the concrete ship than have as yet been put forward, the steel ship is likely to hold its own against its new rival.

THE MERSEY DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Collision Award.—The Oil Tank Steamship Company, Ltd., of Liverpool, as owners of the ss. *Hermione*, obtained on Monday in the Admiralty Division a decree limiting their liability to £38,920, in respect of damages arising out of the loss of the Middlesbrough Steamship *Prudentia* and her part cargo of oil. The *Prudentia* sank following upon a collision between her and the *Hermione* in January, 1916, and subsequently the latter vessel was pronounced solely to blame for the collision. The sum above mentioned represents the aggregate amount of £8 per ton on the registered tonnage of the *Hermione*.

The Education Bill and Shipping.—There is one part of the Education Bill which is causing some concern to the shipping interests, namely, the clause which compels all boys between the ages of 14 and 18 years to attend continuation classes, whereat they may learn subjects specially suitable for the calling they have chosen. How this will operate in discouraging boys from going to sea and making the sea their calling is to be inquired into by a Special Committee of the Shipowners' Parliamentary Committee, which includes Sir Norman Hill, of this port, Sir Shadforth Watts, Mr. H. Houlder and Mr. C. Low.

Output of New Tonnage.—Sir George Carter, K.B.E., managing director of Cammell, Laird & Co.'s Birkenhead shipbuilding yard, has been having some straight talks with the vast army of men under him on the urgent necessity for the management and the men to work together in the closest possible co-operation in order to attain the greatest possible output of new tonnage, and the utmost speed and efficiency in the repair and refit of both naval and merchant vessels. During the last week he has addressed three meetings of the employees, each meeting being attended by about 3,000 workmen.

He said it was the united desire of both employers and the men that the whole of the matters relating to labour in shipyards and marine engineering works should be brought under the administration of one Government department, and further, that such questions should only be dealt with by that department after the duly appointed representatives of employers and employed had failed to arrive at an agreement. He enlarged on the proposal to set up works committees representing the men and their employers to deal in the first place with all kinds of inter-trade disputes, &c., and he also spoke of a proposed agreement by which any difference regarding wages could not fail to be gone into within 10 days of the question arising.

On the question of recognition of shop stewards Sir George Carter said he had always been a believer in organised labour, and during the last 25 years he had been dealing with men, he had always recognised the shop stewards in the shipbuilding industry. He was prepared to recognise them to the fullest extent possible, and also to meet for consultative purposes the Shop Stewards' Committees.

SOUTH WALES DISTRICT.

(FROM OUR OWN CORRESPONDENT.)

Freight Rates to Cherbourg.—A joint meeting of members of the Swansea Committee of Coal Exporters to France and the Shipping Section of the Chamber of Commerce considered the basis of sailing-ship freights as compared with the Government schedule. The rates laid down in the Government schedule, it is contended, are quite below what they should be, and it was decided to urge a basis of freights similar to those suggested at Cardiff, viz., 90s. to Cherbourg, and other ports in proportion. The rate for sailing vessels to Cherbourg, according to the Government schedule, is 63s. 6d.

War Risk Insurance.—The following notice has been posted on the Cardiff Coal and Shipping Exchange:—"The Board of Trade desires to draw attention to the arrangements which have been made by the Government War Risks Insurance Offices, 53, Cornhill, E.C.4, under which they are empowered to accept marine risks in certain cases, while the ordinary marine market is insufficient to provide protection to shippers. There is reason to believe that full advantage has not been taken of the facilities thus provided, and it is suggested that in places, where through insufficiency of the market they experience difficulty in obtaining adequate

insurance cover, merchants should instruct their insurance brokers to approach the Government War Risks Insurance Offices in the matter."

Miners for the Shipyards.—It is officially announced that the following are the terms on which colliery workers in the Swansea (Anthracite) Miners' district are being invited to enrol for employment in shipbuilding yards:—12s. 6d. per day for miners, timbermen and repairers, plus 17s. 6d. per week if married, or unmarried with dependents, and plus 10s. 6d. per week to unmarried men or men whose homes are partially dependent on them. If the current local rate of wages is higher, the enrolled workmen are to receive such rate, but if less the current rate will be supplemented by a maximum of 15s. per week. Families of such workmen will continue to receive supplies of house coal as at present, and in the event of the cessation of his new employment the miner will be entitled to an out-of-work allowance of 3s. 6d. per day (including Sundays) for a period not exceeding four weeks. Registration is open to men over 35 years of age.

Regional Shipping Committee.—Sir W. H. Seager presided at a special meeting of the Cardiff and Bristol Channel Shipowners' Association, which had been called for the purpose of drawing attention to the instructions of the Minister of National Service with respect to the establishment of Regional Shipping Committees. The Committees, composed of an equal number of shipowners, port authorities, and National Service representatives, had to consider applications made through them for protection from military service of men engaged on the clerical and technical staffs of ship-owning firms. The Executive had decided to form a panel of six members, but as there were only five members of the Executive over 51 years of age, it was decided to add Mr. H. B. Marquand to the panel, which will consist of Mr. John Cory, Mr. Daniel Radcliffe, Mr. R. O. Sanderson, Mr. W. W. Jones, Mr. H. B. Marquand, and the chairman (Sir W. H. Seager). It was decided that Mr. W. W. Jones and Mr. H. B. Marquand should be the representatives of the shipowners.

Swansea Boilermakers' Wages.—The Committee on Production, on Thursday, issued the following award in the case of the claim of the boilermakers employed at Vivian & Sons, Ltd., Swansea:—

(1) The parties to this reference are (a) Vivian & Sons, Ltd., Swansea, and (b) the Boilermakers and Iron and Steel Ship Builders' Society:

(2) The claim submitted was that the bonus of 12½ per cent. on earnings granted under Orders of the Minister of Munitions (Statutory Rules and Orders, 1917) should be paid to boilermakers (riveters and holders-up);

(3) The application was referred by the Ministry of Labour to the Special Arbitration Tribunal, and by consent of the parties, to the members of the Tribunal sitting as the Committee on Production, so far as regards the case of men not coming within the terms of the Order, No. 1061;

(4) The men concerned are plain time workers, employed on repairs to boilers at the firm's copper and spelter works;

(5) The award of the Committee is that the workmen concerned, aged 21 and over, shall receive, as from the beginning of the first full pay day which followed January 1, 1918, a bonus of 12½ per cent. on earnings, which shall not alter or become part of their time rates;

(6) Clause 5 of this award shall not apply to any workmen who receive in addition to their plain time rates any bonus or allowance other than such bonus or allowance as would be covered by the provisions of Section 3, sub-sections (a), (b), and (c) of Order 1301 (Statutory Rules and Orders, 1917), if the men concerned had been within the terms of such Order, provided that if any such bonus as is mentioned in subsection (b) is less than the bonus granted by this award, such first-mentioned bonus shall cease, and in lieu thereof the workmen concerned shall receive the bonus granted by this award;

(7) Payments of the retrospective amount due under this award shall be made as soon as is reasonably convenient;

(8) In any case where payment has been made to workmen pending the general consideration of their position in relation to the bonus of 12½ per cent., whether by agreement or as a result of arbitration, the amount of such payment shall merge in the bonus awarded under clause 5 of this award and such bonus shall as and from this date be in lieu of and in substitution for any such other payment.

THE FREIGHT MARKETS.

(FROM OUR OWN CORRESPONDENTS.)

London. On the Baltic Exchange chartering business has not been active, but the demand for tonnage is as great as ever. From the River Plate there is a demand of 225s. to the United Kingdom and 250s. to France, which tonnage is wanted badly for general cargoes to the United States. From the ports of the North America Atlantic Seaboard tonnage is required on net form of charter, for which 230s. can be had to the United Kingdom and 260s. to France, with 30s. extra for Gulf loading. For heavy grain 50s. offers to the United Kingdom, 57s. 6d. to France, 75s. to the Mediterranean, and 77s. 6d. to West Italy. Coal cargoes can be had from Virginia to the River Plate at 80s. and to Brazil 84s. For sugar, Cuba to France, 305s. is offered. The Eastern section of the market shows no abatement of interest. From Karachi 250s. is indicated to this country on scale basis, and from Bombay to the same destination, 275s. on deadweight, or 400s. to the Mediterranean. Kernel cargoes can be had at 550s. from the Madras Coast to Marseilles. The rice ports are takers of tonnage at 500s., which figure offers from either Saigon or Burmah to France or the United Kingdom. Salt business could be worked from Torrevieja to Calcutta at 52s. 6d., and to Chittagong at 75s., and 45s. from Port Said to Rangoon. The Mediterranean ore and phosphate ports are taking up tonnage on the basis of 45s. Huelva to the Mersey and 60s. for pyrites to the East Coast United Kingdom, 50s. Bougie to the Clyde, 65s. Tunis to the same destination, 75s. Sfax to the East Coast United Kingdom, 70s. to the Bristol Channel, and 50s. Bilbao to Boulogne. Bay business is indicated by a few fixtures at 17s. Bordeaux and 20s. Bayonne to the Bristol Channel.

Glasgow.—Only a very small amount of business falls to be recorded on the Glasgow market. The tonnage position has shown no improvement throughout the week, and chartering continues quiet with rates firmly maintained all round. The following fixtures were reported:—Glasgow to Gibraltar, 105s.; Bordeaux to Bristol Channel, 17s.; steamer fixed on time charter, general trades, 40s., six months; ship chartered, River Plate to New York, 83s. 6d.; and ship chartered, Virginia to Rio de Janeiro, 81s. 6d., coal.

Newcastle-upon-Tyne.—There is no diminution in the activity of the local mining industry at present, practically all the pits in Northumberland and Durham being engaged at their maximum capacity of output in the supply of fuel on Government, Allied, and home account. A sufficiency of requisitioned tonnage is to hand for the transport of cargoes destined for overseas and coasting ports. So far as neutral business is concerned, this cannot be entertained to any extent at present (1) because of the full absorption of fuel by nearer interests, and (2) because neutrals are not sending their vessels forward to any large extent. There has been rather more business in the local chartering market this week, however. Most of the fixtures arranged have been for Scandinavian destinations at rates which indicate a firm market without much quotable change. Thus, Christiania has been twice done at 150 kr., Gothenburg once at 165 kr., and Halmstad once at 155 kr. Business in other directions has been wholly confined to coasting and French Atlantic ports. It is noteworthy that, for the first time since coasting rates were fixed, a vessel is reported to have been taken up for London at the scheduled price of 17s. per ton. There has been a keen demand for tonnage for Spain and the coaling stations and fully recent rates are on offer, but practically no shipping is available. In any event, the exportation of coal is at present handicapped by the circumstances mentioned above and by the fact that, at present, prompt loading turns are very difficult to arrange.

Liverpool.—Freights on this market are generally unchanged. Business is very slow owing to tonnage scarcity, while on the other hand inquiries show no falling off. Very tempting rates are offering at the coal ports to neutral countries, but free tonnage does not respond. There is likewise a good demand for time boats at firm rates, but fixing is confined mainly to the States-West Indies trade at the unchanged rate of 35s., and to general trading, where in one or two instances 46s. 6d. has been paid for twelve months. Homeward freights present no new feature, except that River Plate now quotes the advanced rate of 225s. to the United Kingdom for neutral boats, 250s. to French Atlantic, and 400s. to Cette. North American net charter business is now quieter, and Northern Range quotes only

210s. to Liverpool, 240s. to France, and 390s. from the Gulf to Genoa, but grain rates are unaltered at 50s. to United Kingdom, 57s. 6d. to French Atlantic, 75s. to Marseilles, and 77s. 6d. to Italy. Eastern markets are quiet but firm, and free tonnage is very difficult to get. Madras to Marseilles indicates 550s., and Saigon offers 500s. to France. Indies firm at 400s. Bombay to Genoa on deadweight, and Karachi quotes 250s. scale to United Kingdom. Mediterranean ore ports have a good inquiry for boats and could do with more tonnage to home ports. Nitrate ports to United Kingdom are nominal at 190s.

Cardiff and Swansea.—There has been no appreciable change in the outward coal freight market. The tonnage position as regards the requirements of the authorities continues in a satisfactory position. The better supply of vessels which has been in evidence for several weeks past continues. Carrying space for other directions has, however, been short of the demand. A brisk inquiry is maintained for the limitation ports, and the maximum rates have been quoted. Inquiries were on the market for Spanish and South American account, but the only transaction reported was for Rio de Janeiro at 120s. The following fixtures were disclosed:—Havre, 47s. 3d. (neutral); La Pallice, 61s. 6d. (neutral); and Bordeaux, 69s. (neutral). An active demand for tonnage prevailed on the Swansea market, although actual conditions remained practically unchanged. The firmness which had characterised quotations was maintained. The following fixtures were reported:—Caen at 46s. 6d. and 48s.; Trouville, 48s.; Rouen, 48s. 9d.; and Sables d'Olonne, 63s. Neutral vessels were engaged in each case.

COMPANY MEETINGS.

Irvine's Shipbuilding and Dry Docks Company, Ltd.—The ordinary general meeting was held on April 17, at Winchester House, Old Broad Street, London, E.C.

The Chairman (the Right Hon. Viscount Furness), in moving the adoption of the report and accounts, said that he did not propose to deal at any length with the financial results obtained, because the information given in the report and balance-sheet was very full. He would, however, like to say that the directors were pleased to be able to present a balance-sheet which might be regarded as satisfactory. As both the shipyards were controlled establishments, having been brought under Government regulations in August, 1915, it would be appreciated that the building policy of the company was to a large extent determined by the Government authorities, and in consequence they had not been free to concentrate their energies upon the class of work best suited to their yards. During the past year they had built for the Admiralty vessels of distinctive types, and had had a large refrigerated meat-carrying vessel under construction, in addition to an oil tanker, cargo liners and standard ships, and they considered this variety of work had acted as a deterrent to the best results of output being obtained. In his judgment, the Government's policy of standardising certain types of vessels was a sound one, and one which must necessarily tend to hasten construction. In practice, however, the improved output thus obtained was largely discounted unless care was exercised to ensure, firstly, that each yard was given the class of vessel for the construction of which it was best adapted; and, secondly, that each yard was given vessels of a uniform type, instead of being asked to build a number of standard ships, each one of a different size and design. He would like to say that, in his opinion, the policy of building special types of vessels in yards not particularly adapted for such specialised construction and alongside ordinary merchant vessels of the types of the principal standard ships, could only have the effect of retarding the whole of the output from those yards, and no advantage was gained in the construction of either one class or the other. The scarcity of suitable labour had for some time caused a great deal of anxiety, but the Government were now alive to the vital necessity of releasing as many skilled men as possible from the Army to re-man the shipyards. It was very pleasing to notice that representatives of the employers and workmen on the North-East Coast in the shipbuilding and allied industries had recently passed a joint resolution stating that they would do everything in their power to turn out in increasing numbers, guns, shells, engines, ships and other munitions of war. Employers and workmen stood shoulder to shoulder, determined to maintain and increase their efforts until complete victory crowned our arms. With the object of bringing their plant into the highest possible state of efficiency, and

so that the available labour might be utilised to the greatest advantage, they were arranging to instal the plant necessary to drive the whole of the machinery at their harbour yard by electricity. As to the future, it was hard to forecast. He could, however, say with confidence that there was a large volume of work awaiting the shipbuilding industry, and for some years to come it was certain that all their facilities would be kept fully occupied. He was sure they were all more anxious about getting the large number of ships so badly needed at the present moment than they were about anything else, and he could assure them that anything he could do for Irvine's Company to increase the output of ships he would be only too ready and glad to do.

Mr. Clarence C. Hatry seconded the motion, which was carried.

Canada Steamship Lines, Ltd.—The fourth annual meeting was held in Montreal on March 5 last.

The President of the company (Mr. James Carruthers), in moving the adoption of the report and accounts, referred briefly to the operations during 1917, and stated that the first mortgage bonds outstanding had been reduced by about \$900,000 since the last report. He added that the directors had sold and bought a number of vessels during the year, their object being (and they had been successful so far) to re-establish the fleet on a more modern basis to meet changing conditions. As to prospects, the losses in ocean tonnage suffered by all nations would take a long time to replace. He felt, therefore, warranted in saying that in all probability present rates would continue until the available tonnage became sufficient to meet at least normal conditions, which, in his opinion, so far as shipping was concerned, would not return for years. He had every reason to expect a large increase in the acreage of grain in the Canadian North-West during the coming season. The enormous shortage of foodstuffs the world over, and the knowledge that, even if peace were declared within six months, the urgent requirements would continue, should lead to the continuance of high prices for all kinds of grain for some time to come, so that there was every incentive to the farmer to put every acre possible under cultivation. With the large grain-carrying fleet which the company had on the Upper Lakes, shareholders could understand what a great difference it made to the company if crops in the Canadian North-West were large or small.

Mr. J. W. Norcross (the Vice-President and managing director of the company), in seconding the motion, said that some of the older and more obsolete ships had been sold and replaced by modern tonnage. While it was true that a number of smaller vessels of the company had been taken from the Great Lakes for the ocean service, the Lake fleet had been augmented by larger ships, which could be more easily and cheaply operated. The ocean fleet had been increased and was operating successfully in different parts of the world. All losses were fully covered by insurance to the extent of replacement values.

The report and accounts were adopted.

General Steam Navigation Company, Ltd.—The 15th annual general meeting was held at the offices, 15, Trinity Square, London, E.C., on April 17.

The Chairman (Mr. Richard White), in moving the adoption of the report, said that included in the first item on the credit side of the balance sheet were (1) the depreciated book value, which was much less than the present actual and insured value of the company's remaining 28 steamers, consisting of 21 sea-going ships, the five small steamers which were used in the London-Lowestoft-Yarmouth trade, and the two summer excursion paddle steamers *Eagle* and *Golden Eagle*; (2) the company's freehold properties; and (3) the sum of money which had been received for the lost steamers, the whole of which amount had been invested in British Government securities. While the sum so received was very much greater than the aggregate low values at which the ships stood in the company's books, yet this money would not suffice at to-day's prices to meet much more than two-thirds of the cost of equivalent new tonnage to replace the lost vessels. Since the outbreak of war the older and less highly valued vessels had proved themselves to be satisfactory earning units in trades where the newer, highly-valued ships could not be economically employed because of the great cost of war-risk insurance. In last year's report it was stated that work could not be commenced on the four ships for which orders had been placed in 1916 because of Admiralty requirements in that year, and that position remained unchanged. As tonnage must be acquired by the company to prevent certain of their trades from being served after the war by neutral shipowners who had not had their ships requisitioned by their Governments and who

had accumulated large sums of money, the directors found a yard where the construction of two new ships could have been commenced and which could probably have been completed by the end of this year. The contract was practically agreed, but the Government Controller, who was otherwise sympathetic, decided that only "standard ships" must be built. As a result of collaboration with other shipowners carrying on similar trades, a ship of the type and size had, to the best of their belief, now been approved for standardisation, and permission would, it was understood, be given for a limited number of such small ships to be built. The favourable offer made by the company last December to redeem the outstanding debentures was taken advantage of by the great majority of the stockholders; indeed, holders of only £20,355 stock declined to avail themselves of the opportunity of making an advantageous exchange of investment, besides being able to evince patriotism by acquiring War Bonds. He hoped, after the directors' public decision to extend the period of redemption and to pay interest up to the date of redemption, that those holders who were reluctant to make an exchange of investment would recognise the favourable chance now offered to them and take advantage of it.

Captain H. B. Hooper, R.I.M., seconded the motion, which was carried.

COMPANY REPORTS AND DIVIDENDS.

Lloyd Italiano.—The directors have declared a dividend of 16 lire per share, as per balance at December 31, 1917.

Atlaswerke A.G., Bremen.—The directors recommend 14 per cent. dividend (compared with 10 per cent. last year).

Oldenburg Portugiesische Dampfschiffs Rhederei.—A dividend of 15 per cent. is declared. No dividend was paid last year.

Altonaer Hochseefischerei A.G.—This company is paying 12 per cent. dividend for 1917, compared with 9 per cent. for 1916.

Dampfschiffs-Rhederei "Horn" Aktien Gesellschaft.—This company proposes to pay a dividend of 10 per cent. for the past financial year.

Griffiths-Lewis Steam Navigation Company, Ltd.—The directors have decided to pay an interim dividend of 5 per cent. actual, free of income tax.

Schlesische Dampfer Co.—Berlin Lloyd.—No dividend is to be paid for 1917 (6 per cent. last year). The allowance for depreciation was increased from £13,650 to £17,900.

Maindy Shipping Company, Ltd.—The directors have declared a dividend for the quarter ending March 31 last at the rate of 10 per cent. per annum, payable on May 4, to all shareholders on the books of the company on April 24.

Transatlantica Italiana.—This company made a profit of 5,521,117 lire in 1917, and has declared a dividend of 8 per cent. The company proposes to increase its capital in order to carry out a big naval constructions programme.

City of Dublin Steam Packet Co.—The directors recommend the payment of a dividend of 5 per cent. per annum, less income tax, on the 5 per cent. cumulative preference stock, and a dividend of 5½ per cent. per annum, less income tax, on the ordinary stock for the half-year ended February 28 last.

German Dividends.—The stated dividends are declared for 1917 (the 1916 figures being added for comparison):—Bremer Vulkan, 20 per cent. (12½ per cent. in 1916). A.G. Neptun, Rostock, 10 per cent.; J. Frerichs & Co. A.G. Osterholz-Scharmbeck, 10 per cent. (8 per cent.); Hansa Lloyd Werke, 12 per cent. (12 per cent.).

Flensburger Dampfer Compagnie.—This company made a gross profit of M.1,139,059 during 1917, as against M.880,084 the previous year. After deducting certain amounts and writing off a sum of M.100,000 for depreciation, there was a net profit of M.877,258 (M.581,281 previous year), out of which a dividend of 20 per cent. (15 per cent. previous year) has been declared, and M.5,549 carried forward.

Sutherland Steamship Company, Ltd.—The directors' report states that the profit and loss account, after payment of interest on mortgage loan, interim dividend, and after providing for income tax, excess profits duty and other contingencies, leaves a balance of £50,309. The directors recommend a final dividend of 4s. per share, free of income tax, which will absorb £40,000, leaving a balance of £10,309 to be carried forward.

Verein. Flensburg Ekensunder u. Sonderburger D. S. Gesell.—Including £362 (£282) brought forward, the net profit for 1917 is £8,000 compared with £3,900 for 1916. A dividend of 12 per cent. (8 per cent.) is paid.

Hafenrundfahrt A.G., Kiel. According to the report for 1917, the fleet was increased by the addition of the steamship *Garden* and 250,000 more persons (2,338,466 total) were carried than during the preceding year. Gross receipts amounted to £26,100 (compared with £19,300 last year) and the company pays 5 per cent. (4 per cent.) dividend.

"Ozean" Dampfer Aktien Gesellschaft.—This company made a gross profit of M.617,071 during 1917, as against M.279,114 the previous year. After allocating certain sums, writing off M.60,000 for depreciation and setting aside M.70,457 (M.72,743 previous year) for repairs and classification, there remained a net profit of M.480,054 (M.187,805 previous year). A dividend of 20 per cent. (10 per cent. previous year) has been declared, and M.3,154 carried forward.

Vereinigte Elbeschiffahrts Gesell.—The deficit of £36,500 brought forward from 1916 will probably exceed £50,000 when the accounts for 1917 are completed. Prospects are not good for the current year. In Elbe shipping (contrary to conditions on the Oder) there is a scarcity of profitable long distance traffic, and in particular of through traffic between Hamburg and Austria. Recent increases in freight are caused and absorbed by increased expenses.

Burns Steamship Company, Ltd.—The net profit for 1917 amounts to £3,780, to which falls to be added balance brought forward from previous year, £434 (together, £4,214), less dividend on preference shares paid, for half-year ended June 30, 1917, £1,750, and for half-year ended December 31, 1917, £1,750 (total £3,500), leaving a balance to carry forward of £714. The company's service was throughout the year conducted with efficiency, and the vessels, their machinery and plant were maintained in excellent order.

General Steam Fishing Company, Ltd.—The report for the year ended March 2, 1918, states that the profit, inclusive of balance brought forward, amounts to £27,824. Of that sum the amount left to the company, after paying excess profits duty and income tax, will be about £9,000, and should these taxes be raised in the new Budget a corresponding reduction will be made in the sum available for disposal. In dealing with that sum, the directors propose to pay a dividend of 10 per cent. per annum and a bonus of 5 per cent., both less income tax, and to carry to reserve fund £3,500. The balance, less directors' and auditors' fees, will be carried forward to next year's account.

Albion Steam Coal Company, Ltd.—The directors' report for the year ended December 31, 1917, states that the net profit on trading for the year, including an amount due under the Coal Mines Control Agreement (Confirmation) Act, amounts to £26,120, which, with £6,270 brought forward from last year, makes a total of £32,390. Out of this amount the dividend due on the preference shares for half-year ending June 30, 1917, has already been paid, and the disposable balance now at the credit of profit and loss account is £25,790. The directors propose (with the consent of the Controller of Coal Mines) to pay the half-year's dividend on preference shares to December 31, 1917, at the rate of 6 per cent. per annum and a dividend of 5 per cent. on the ordinary shares for the year ended December 31, 1917 (less income tax in each case), leaving £8,190 to be carried forward. The works, machinery and plant have been maintained in a state of efficiency.

Oxford Canal Navigation.—The total receipts for the half year ended December 31, 1917, amounted to £7,055; this added to unappropriated balance of the last half-year (£2,661) made a total of £9,716, which, after deducting expenses, leaves a net profit of £4,500. To this must be added the sum payable by the Board of Trade for the 10 months ended December 31 last, to bring the net revenue for the period during which the company has been under control equal to the net revenue of the corresponding period of 1913. The actual sum payable had not yet been finally agreed, but the committee consider that it cannot be less than £5,400, making a total of £9,900, which enabled them to declare a dividend for the year of £4 10s. per share, payable March 15 last, less income tax, and also to place the sum of £900 to contingency fund, leaving a balance of about £961 to be carried forward, subject to adjustment when the sum payable by the Board of Trade had been finally agreed. The Canal and works are in good order and condition and the water supply satisfactory.

Sachsische Bohmische Dampfschiffahrt Gesell.—This company proposes to pay 5 per cent. dividend. Last year no dividend was paid.

Schiffswerfte J. Frerichs & Co. A.G., Osterholz Scharmbeck.—A dividend of 10 per cent. is recommended, compared with 8 per cent. last year.

Vereinigte Bugsier u. Frachtschiffahrt Gesell.—The directors recommend a dividend of 30 per cent., compared with 25 per cent. last year.

British Westinghouse Electric & Manufacturing Co., Ltd.—Dividend of $7\frac{1}{2}$ per cent. on the preference shares for the year ended December 31 last.

Neptun Schiffswerft u. Maschinenfabrik, Rostock.—After making suitable allowance for depreciation, it is expected that a dividend of 10 per cent. will be paid.

Lubeck Konigsberger Dampfschiffahrts Gesell.—It has been decided to pay 12 per cent. dividend for 1917 and to apply the balance of profit to depreciation and reserves.

Deutsch Australische Dampfschiffahrt Gesell.—This company has again been exempted from preparing accounts and calling a general meeting in respect of the past year's working.

Hansa Lloyd Werke A.G., Bremen.—The directors propose again to pay a dividend of 12 per cent. A recommendation is to be laid before the general meeting that the share capital be raised by £295,000 to £980,000.

East Asiatic Co., Copenhagen.—The gross profit for 1917 was £2,525,000 (compared with £2,090,000 for 1916) and a dividend of 45 per cent. was again paid. It is proposed to raise the capital from £1,380,000 to £2,760,000 by new shares issued at 150 per cent. The increased capital will be applied largely to increasing the fleet. A number of motor-ships are already on order from a Danish yard.

Vereinigte Elbeschiffahrts Gesell. A.G., Dresden.—Conditions remain unfavourable and the company has again a deficit on the year's working amounting to "several hundred thousands of marks." Last year the loss was £36,500. Prospects for the current year are uncertain. There is a shortage of profitable long-distance freight, such as that on the Hamburg-Austria route. The recent considerable increase in freights is offset by the serious increase in expenses.

Trent Navigation Company.—The report for the year ended December 31, 1917, states that the receipts on revenue account amount to £22,129, as against £23,802 last year, a decrease of £1,672. Receipts from tolls from by-traders amount to £2,712, compared with £2,285 last year, an increase of £427. The total navigation departmental receipts are £7,975, compared with £8,840, a decrease of £865. Expenditure in the navigation department amounts to £4,436, compared with £3,390 last year, an increase of £506. The carrying department receipts amount to £14,155, compared with £14,962 last year, a decrease of £807. Traffic carried by the company during the year amounted to 34,385 tons, compared with 38,114 tons last year, a decrease of 3,729 tons. The revenue account shows a profit of £3,463, compared with £2,526 last year, an increase of £937.

Frederick Leyland & Co., Ltd.—The report for the year ended December 31, 1917, states that in March, 1917, the remainder of the steamers of the company, which were not already serving as transports, were requisitioned by the Government for trading purposes, and it is unlikely that any of them will be released before the cessation of hostilities. The directors regret that, owing to the depletion of the company's staff, and to complications arising from war conditions, closed and audited accounts for 1917 cannot be submitted for a considerable period. A *pro forma* balance sheet to December 31 last has been prepared, but, while the directors believe it is substantially correct, the figures submitted are only approximate, and subject to final settlement of accounts with the Government. Provision has been made for all taxation, depreciation and contingent liabilities, including those arising out of the war. The dividend on preference shares has been paid to November 30, and it is proposed to pay to ordinary shareholders a final dividend of 5 per cent. in respect of the year 1917, and to carry forward an estimated balance of £38,000. Outstanding debentures amount to £2,800, the same as last year. During the year 1917 there have been further unavoidable losses or damage to the company's steamers through war perils. The work of the company has been carried on efficiently, on shore and afloat.

COMPANY REGISTRATIONS.

Williams' Foreign Patents, Ltd.—Capital, £10,000, in £1 shares. Objects: Agreement between the Marine & General Concrete Construction Syndicate, Ltd., E. O. Williams and J. B. Corrie (on behalf of the company), to purchase, build, charter and acquire ships, shares, stocks and securities of any shipping companies, &c. Signatories:—

E. C. Summers, 74 Cheapside, E.C.4, solicitor.
V. L. Atbrook, 74 Cheapside, E.C.4, clerk.

The first directors are:—J. B. Corrie, F. Neil and A. R. Brown. Registered office: 15, Victoria Street, Westminster. Private company.

Steamship Ardgartan Company, Ltd.—Capital, £80,000, in £100 shares. Objects: To carry on the business of shipowners, stevedores, forwarding agents, insurance brokers, lightermen, tug owners, &c. Signatories:—

J. Fulton, junr., 1, Cathcart Street, Greenock, shipowner.
J. J. Lang, 1, Cathcart Street, Greenock, shipowner.

Managers: Lang & Fulton, Ltd. Registered office: 1, Cathcart Street, Greenock. Private company.

South Wales Ferro-Concrete Shipbuilding Company, Ltd.—Capital, £40,000, in £1 shares. Objects: To construct and establish a shipbuilding yard or yards at Porthcawl, Glamorgan, and to carry on the business as indicated by the title. Agreement with T. H. Evans, J. Griffiths, H. J. Griffin, and C. J. Evans. Signatories:—

C. S. Thorne, 101, Leadenhall Street, E.C.3, manager.
H. L. William, 101, Leadenhall Street, E.C.3, manager.

The first directors are to be appointed by the subscribers. Registered office: 101, Leadenhall Street, E.C.3. Private company.

Coulson Tug Company, Ltd.—Capital, £5,000, in £1 shares. Objects, to take over the business of a tug owner carried on by J. C. Coulson of South Shields. Signatories:—

J. C. Coulson, 15, Blumer's Terrace, South Shields, tug owner.
Mrs. M. B. Coulson, 15, Blumer's Terrace, South Shields.

The first directors are: J. C. Coulson and J. W. Brown. Registered office: International Stores, Dean Street, South Shields. Private company.

QUESTIONS IN PARLIAMENT.

Shipping Losses.

Mr. G. Lambert, on April 17, asked the Secretary to the Admiralty whether the Admiralty proposals for the publication of shipping losses through marine risk and enemy action had been approved by the War Cabinet.

Dr. Macnamara: Yes, sir.

A Dutch Steamer.

Mr. Joynson Hicks, on April 18, asked the Minister of Blockade whether the ship *Beijerland*, of Rotterdam, was taken over by the Admiralty in the middle of March and released at Liverpool on or about March 30; and, if so, what was her cargo and why was the ship released.

Lord R. Cecil: The facts are as stated. The vessel was loaded with a cargo of soda for Holland under a contract existing between His Majesty's Government and the Dutch Soda Commission. Any other course would have involved the breach of an existing agreement.

Irish Cattle Shipments.

Mr. Clynes (Secretary to the Ministry of Food) informed Captain Wright, on April 17, that the number of fat cattle shipped from Ireland to England during the last three months was 69,743, and to Scotland, 7,614. This gave a weekly average in the case of England of 4,981, and of Scotland, 543.

Management of Chepstow Yard.

Mr. W. Thorne, on April 17, asked the Secretary to the Admiralty whether it was the intention of the Government to work the Chepstow shipbuilding yard under their own control or whether it was to be worked under private enterprise; and, if it was to be worked under Government control, would he state how it was to be managed, and whether the men to be employed were to be soldiers or civilians.

Dr. Macnamara: It is the intention of the Government to work the Chepstow Yard during the period of the war under their own

control. Mr. Noel Peck, late managing director of Barclay, Curle & Co., Ltd., and director of Swan, Hunter and Wigham Richardson, Ltd., and the North of Ireland Shipbuilding Company, has been sent down to Chepstow as Director of Shipbuilding to manage the yard, and will have associated with him other experienced shipbuilders. The question as to the status of the personnel has not yet been definitely settled.

Mr. Chancellor: Is it proposed after the war to hand these national shipyards over to private owners?

Dr. Macnamara: If the hon. gentleman will look at the answer I gave on November 15, he will see that the last paragraph answers his question.

Mr. W. Thorne: Is the right hon. gentleman aware that there is a very strong rumour about that the men who are going to be employed here will be soldiers; if that is so, are we to understand that they will get the full and proper rates of the men employed in the other shipyards?

Dr. Macnamara: The yards, that is the slips, are being built by prisoners of war and soldiers. As to ship construction, perhaps the hon. gentleman would put a question down.

Lord Inchcape and the Chepstow Yard.

Mr. G. Lambert, on April 17, asked the Secretary to the Admiralty whether the Admiralty had taken over a shipbuilding yard at Chepstow from a company of which Lord Inchcape was chairman; whether that company arranged to have two ships laid down last October and two more in March last; who were the officials responsible for preventing a private company from utilising this yard and placing its resources under the influence of Government control; and whether such officials were still managing the shipbuilding facilities at Chepstow.

Dr. Macnamara: The answer to the first part of the question is in the affirmative. Whatever the company's intention may have been with regard to laying down ships in October last, when the Admiralty took over, on August 31, 1917, all prospect of having two ships ready by October, 1917, had vanished, as only 620 piles out of the 1,350 required for them had been driven. The company's own engineer, on July 24, 1917, stated the dates for completion of the two most forward berths as three months and four months respectively, and the rest as six, eight, and twelve months, from the time when an additional 200 men should be obtained. That additional labour had not been obtained in July, 1917, and was not obtained until after the Admiralty had taken possession. The principal reason that influenced the Government in taking over the yard was that the contractors could not get sufficient men on the work. Since the Admiralty has taken over, the difficulty of housing the labour has been taken vigorously in hand, hutting accommodation for 1,600 men has already been completed. Berths Nos. 1 and 2 are complete, and other work in the yard is progressing satisfactorily. As regards the third part of the question, I must take exception to the implication that by our action progress in new merchant output has been prejudiced. From the earlier part of my answer my hon. friend will see that this is not so. As regards the final part of the question, I have just stated the facts in the answer I have given to the hon. Member for West Ham South (Mr. W. Thorne).

Mr. G. Lambert: Is the right hon. gentleman aware that Lord Inchcape sent a letter to *The Times*, which was published on March 25, stating distinctly that work had been delayed, and also that he would have had two ships laid down in these slips in October last?

Dr. Macnamara: Yes, I saw the letter, and, if my hon. friend will forgive me, I recognise the question as, in substance, based on that letter. The letter is receiving attention, and I believe the First Lord will, if he has not already done so, reply on the facts to Lord Inchcape.

Housing Shipyard Foremen on the Clyde.

Mr. Acland Allen, on April 18, asked the Secretary to the Admiralty whether his attention had been drawn to the fact that Napier & Miller, Ltd., had purchased a terrace of houses in Old Kilpatrick, Dumbartonshire, and had given notice to the tenants to leave at Whitsuntide; and whether, in view of the fact that the present tenants are all engaged in public work, and that there was a dearth of housing accommodation in the neighbourhood, he would take such steps as might be necessary to prevent their being turned out of their houses.

Dr. Macnamara: Attention has been drawn to the fact that Messrs. Napier & Miller have purchased a terrace of houses in Old Kilpatrick, Dumbartonshire. The Controller-General of Merchant Shipping wishes it to be known, however, that in order to improve

the production of merchant ships it is essential that the foremen of each yard should live as close as possible to their work, and it is with the intention of being able to house the necessary foremen close to their work that Messrs. Napier & Miller have purchased the terrace of houses referred to. The tenants who have been given notice include, I understand, some employed in other districts on ship-building and munition making, but strict instructions have been given that no tenant is to be turned out until suitable accommodation for him has been found.

Ships' Officers in Ruhleben.

Mr. Peto, on April 22, asked the representative of the War Prisoners Department whether the difference of opinion with the German Government as to the status of all officers of the mercantile marine interned in this country and in Germany had now been settled; whether there were still 54 officers of the British mercantile marine still interned in Ruhleben over 45 years of age who were entitled to repatriation under the agreement arrived at on January 2, 1917; whether he could state how many German officers of the German mercantile marine were still interned in this country awaiting repatriation under the same agreement; and when he anticipated this exchange would be completed.

Mr. J. F. Hope: I regret to have to state that the difference of opinion with the German Government has not yet been settled. Approximately, 100 ships' officers over the age of 45 are still interned at Ruhleben, including engineers and officers of trawlers and fishing vessels. I understand that between 80 and 90 German ships' officers of the like age are interned in civilian camps here who were captured before November, 1916. The figures of those captured after that date are unfortunately not at present available. The repatriation of the above-mentioned officers is proceeding, and I have no reason to suppose that they will not be sent home as fast as the claims of other classes of prisoners and shipping facilities admit.

NEWS PARAGRAPHS.

• **The 48-hour Week.**—Sir George Carter, managing director of Cammell Laird & Co., Ltd., when addressing the firm's workmen at Birkenhead last week, advocated the introduction of a shorter working day that men might have leisure and rest and education in its broadest sense. He would like to see a 48-hour week, and if possible to see it still further shortened by economy and by extra energy in production.

Dining Club for Liverpool Shipping Staffs.—The Liverpool Club, one of the most select dining clubs in Liverpool, is to be given up. The war is mainly responsible, as so many of the members have gone on active service. The suite of rooms occupied by the club in the Royal Liver Building and the Club's furniture, &c., are being taken over by Sir Owen Philipps, who is organising the establishment as a dining club for the staffs of the many Liverpool shipping companies under his direction.

East Coast Steel Corporation, Ltd.—The properties of Cochrane & Co., Ltd., which include four blast furnaces at Cargo Fleet, a large foundry, ironstone mines at Stanghow, and a colliery, have been acquired by the East Coast Steel Corporation, Ltd., which controls large interests on Tees-side. Lord Furness is the chairman and Mr Benjamin Talbot, managing director. The works of Cochrane & Co. were established over 60 years ago and they regularly employ over 3,000 hands.

The Cunard Meeting.—The Cunard Company's annual meeting last week, which was adjourned for the presentation of the accounts to a later date, was devoid of interest, except for one or two personal matters. Referring to the invitation to Mr. A. D. Mearns to join the board of directors, Sir Alfred Booth, Bart., said Mr. Mearns had received many congratulations from his friends inside and outside the company, and the shareholders would be as pleased as anyone else that Mr. Mearns was combining the position of director with that of general manager.

Sutherland Steamship Company, Ltd.—The shareholders received, on Saturday, the certificates for the new shares, following upon a resolution passed at a meeting of the company on February 19, authorising the directors to capitalise the sum of £400,000 out of the profits of the company which had arisen from the realised appreciation in the value of the capital assets, and that in respect of the sum so capitalised the directors were given sanction to allot to the shareholders, registered on April 1, 1918, 400,000 shares of

£1 each, fully paid, to be distributed in the proportion of two new shares for every one share held.

The Mercantile Marine Appreciated.—In a letter to the Imperial Merchant Service Guild from the Association of Chambers of Commerce of the United Kingdom, it was stated that a resolution was passed at the annual meeting of the Association on April 9, when 123 Chambers of Commerce were represented, to the effect that the Association wished "To place on record their appreciation of the very gallant and meritorious conduct of the men of all ranks serving in the Mercantile Marine who have by their unflinching devotion to duty under the most hazardous circumstances done so much to maintain the seafaring traditions of the Empire."

Motor Ships for Baltic Traffic.—For some time past, much interest has been displayed in Sweden in the application of medium-sized motor ships to Baltic service. Last year the Sodra yard (Stockholm) built a motor ship of 1,500 tons d.w. capacity, and the Finnboda yard has now developed a standard 2,500-ton type. Several other Swedish yards are building 700-ton vessels specially for Baltic service. A striking feature of these comparatively small craft is the use of electrically-driven anchor and cargo winches, the whole of this equipment being supplied by the yard. According to *Hansa*, there are about 20 of these vessels at present under construction in various Swedish yards. The usual driving equipment is a three-cylinder crude-oil motor of 270 h.p., driving a single screw, and yielding a speed of 9 knots. The motor is placed aft, and the general division of the hull is similar to that hitherto usual in Swedish steamships for Baltic service.

"Some Aspects of the Naval War."—Lieutenant E. H. Gordon, R.N.R., who has 50 years' record of seamanship, during 40 years of which he was in the service of the P. & O. Co. as commodore-captain for the last few years, visited Newcastle last Friday under Admiralty auspices and lectured to the members and guests of the North-East Coast Institution of Engineers and Shipbuilders on "Some Aspects of the Naval War." Incidentally, he mentioned that last year the Navy transported overseas 7,000,000 men, 500,000 horses and mules, 200,000 vehicles, and 9,500,000 tons of stores, making, since the war commenced, totals of 13,000,000 men, 2,000,000 animals and 180,000,000 tons of stores. In the first two months of war the Navy captured 1,000,000 tons of German shipping and, during the first four months, all German raiders then on the high seas were destroyed, despite Germany having spent £300,000,000 sterling on her fleet before the war.

The First Sea-going Concrete Vessel.—The first large sea-going reinforced concrete vessel built in this country will soon pass into the service of the Government. The vessel is built on ship lines, with gracefully curving bow and stern. Later vessels are to be of a type called "coffin-shape," so as to avoid the curves and simplify construction. The vessel is 150 ft. long, 24 ft. 6 in. broad, and 13 ft. 6 in. in depth, and has a draught of nearly 11 ft. It has a displacement of about 900 tons, and a deadweight carrying capacity of about 400 tons, the hull being divided by watertight bulkheads into five compartments. Built under Lloyd's inspection, it has been classified "A1." The vessel is strongly built, fireproof, and capable of withstanding the buffeting of any ordinary sea. In its construction about 260 cubic yards of concrete and 65 tons of steel bars were used. The building has occupied about 100 men for five months, but it is estimated that subsequent vessels may be built in three months.

Shipbuilding at Chepstow.—Since Major-General Grey was appointed to take command of the construction of the national shipyards at Chepstow and Beachley, the work has been speeded up to an appreciable extent, and the Major-General will shortly take up his residence at Mathern House, two miles out of the town. Two slipways are ready at Chepstow and three at Beachley, and the bed of the first ship is already lying alongside at Chepstow. It is intended to use conscript labour, i.e., to bring from Sandwich shipyard workers who have been brought home from France, and the announcement is made that several thousand will shortly be drafted to Chepstow on shipbuilding in the national yard. The proposal to utilise such labour was discussed at a mass meeting of Finch's, over which Mr. John Hill, of Newcastle, presided, with whom were Mr. Smith, Mr. Hall, Mr. Bob Scott and Mr. Steve Giblar, who were met by the military and subsequently taken over the national yards, the Bulwark camp and garden city. A resolution against the introduction of such labour was passed, and a branch of the Federation was formed, as well as a committee representative of the various trades to settle local disputes and avoid stoppages. A

Street. It was made to the men to accept conscription of labour in the national interest, and Mr. John Hill stated that Lord Pirrie assured him that after the war conscripted labour would cease and every facility be afforded to private enterprise to work the shipyards. Mr. Noel Peck has been appointed general manager of the national shipyard at Chepstow and Mr. Elston and Mr. Butt, of Birkenhead, yard managers. There are eight ships under construction in Finch's yard, including four of the standard type, one of which, 4,000 tons, is nearing completion. Another French barge will be launched shortly.

New Russo-Swedish Steamship Company.—A Renter message from Stockholm states that a new steamship line, called the Russo-Swedish Steamship Company, is in process of formation for trade between Russia and Sweden. The minimum capital will be 1,000,000 kr. and the maximum 3,000,000 kr. The service is to start in June with a collective tonnage of 2,800 tons.

Shipbuilding by U.S. Steel Corporation.—A message transmitted through the wireless stations of the United States Government and issued as an Admiralty Wireless Press message, states that Mr. E. H. Gary, chairman of the United States Steel Corporation, when discussing shipbuilding by the Corporation at the annual meeting, said that the first ship would be launched next month. Thereafter the schedule called for the completion of one ship from the Atlantic Coast and another from the Gulf Coast yard every 20 days. In other words, the Corporation would produce one ship every 10 days.

Shipyard Disputes.—The Press Bureau has issued the following announcement:—Representatives of the Shipyard Trade Unions and the Shipbuilding Employers' Federation met Lord Pirrie, the Controller-General of Merchant Shipbuilding, at the Admiralty last week, when plans for the settlement of trade differences by local committees in the shipyards were discussed. It was agreed that where possible the differences are to be settled in the yards where the dispute arises by the usual trade machinery, and that Government intervention shall only take place in the event of the parties agreeing that this is unlikely to effect a settlement.

Amalgamation of Trade Unions.—The Boilermakers and the Shipwrights have now extended their scheme of closer unity so as to embrace the Blacksmiths. In the shipyards and engine shops these three organisations have a membership of about 150,000, the Boilermakers being the predominant partner with 82,000 members. Within 12 months of last February a ballot vote of the unions is to be taken on the question of complete amalgamation, and the members interested are being urged in the meanwhile to continue their propagation in the coming months in favour of the recommendation that there be unification of three important societies in the shipbuilding and engineering industry.

Phonograph Warning at Sea.—At the Royal Institution recently, Professor J. Joly said that sound travels with such clearness under water, that a watertight watch which had been lost in the sea and continued to "go" was recovered by a diver, who traced it by its tick. He then described a radio-telephone, in use by the United States. In a certain United States lighthouse, where there was no human being, a phonograph spoke into a receiver, which converted its sounds into ether waves, which were picked up by a ship and again translated into sounds. Thus, on approaching Point Judas a sailor heard the words "Point Judas" called out again and again. As he neared the dangerous point the voice cried in a deeper tone: "Keep off; you are getting into danger."

Lord Pirrie's Appeal.—Lord Pirrie, Controller-General of Merchant Shipbuilding, has made the following appeal to the shipyards: The German offensive has thrown an increased burden on the shipping resources of the country and its Allies. Enormously increased supplies of men, munitions, and war material have to be transported to France, not only from this country, but also from America. The shipping resources of the Allies were severely taxed before this additional burden was thrown on them. Our reliance on the United States for a noble answer to the Prime Minister's appeal has not been misplaced. It must be remembered, however, that every additional ship employed in sending this assistance means a corresponding reduction in the quantity of food that can be sent. Consequently an urgent appeal is made to the shipyard workers, employers and all connected with the construction of ships, to redouble the splendid efforts already made. They can take an almost direct part in countering the enemy offensive. Though the actual fighting machine is the arbiter at the moment, shipping production is of equal importance and a matter of vital urgency.

Hochseefischerei Bremerhaven A.G.—It is proposed to raise the share capital by £49,000.

Danube Shipping.—The Bayerische Lloyd (Regensburg) announces that traffic from Regensburg and Passau to Vienna and Buda Pesth (and *vice versa*) was recommenced on March 16.

German Navigation Schools.—It has been decided that in addition to the six schools at Danzig, Stein, Flensburg, Altona, Geestemünde and Leer, the schools at Stralsund, Barth and Papeburg are to be continued.

Croatia A.G., Agram.—This new shipyard has been established with the support of Croatian banks to found large shipbuilding establishments on the Croatian coast. It is proposed to build wooden vessels at first and large quantities of timber have been secured for the purpose.

Oesterreichische Schiffswerfte A.G., Trieste.—The *Frankfurter Zeitung* confirms the report that this company is dependent for its revival upon State assistance. Without this its fate seems to be sealed, the share capital being £441,000; the book value of the damage done at Monfalcone being £590,000; and the reconstruction cost much higher.

Deutsche Schiffswerft. A.G.—Sanction has been obtained for the formation of this company with a capital of £392,000. The Reichsbank will issue the shares and a large yard is to be built at Wismar. Three vessels of 12,000 tons d.w. capacity are first to be constructed and slipways are to be provided later for the simultaneous building of six vessels.

Rosenbergs mek. Verksted, Stavanger.—This company recently increased its capital to £332,000 and has now a larger capital than any other Norwegian yard. The yard has been extended to such an extent that three vessels, each of 14,000 tons d.w., can now be laid down simultaneously, whereas no vessel larger than 6,400 tons was built in Norway prior to the war.

Bayerischen Schiffbau Gesell., Erlenhach.—This company has been formed (with a capital of £14,700) to continue the working of the Schellenberg yard on a wider basis. The principal interests represented in the foundation are the Darmstadt Bank, Filiale München, the Bayerische Rheinschiffahrt concern, the Frankfurt firm K. Presser, and Anton Schellenberg (Wörth).

£5,000 from Japan for Sailors.—A gift of £5,000 from Japan to King George's Fund for Sailors has been received through the Secretary of State for Foreign Affairs. In a letter to Captain A. W. Clarke, Deputy-Chairman of the Fund, the Secretary of State says that this gift constitutes part of a sum raised by Prince Tokugawa, Baron Shibuzawa and a society formed in Japan to alleviate the sufferings of the sick and wounded sailors and soldiers of the Allied countries.

Shipbuilding and Soldiers.—A case of considerable interest to shipbuilders was heard at Thornaby-on-Tees on Monday. Cecil Howard Shearman, managing director of the Tees Refinery, was charged with having unlawfully communicated with a soldier with intent to induce or assist such member to obtain or apply for his release or discharge, so that he could during the continuance of the war engage in civil employment. It appeared that prior to the war defendant had bought some plant from a man named Walter Fisher. Fisher was called up into the Army before the plant was in working order. Defendant was anxious to get Fisher's aid in installing the plant and Fisher was willing to go to the works for a few weeks to finish the job. He suggested that defendant should write to the Army authorities for his temporary release. Defendant did so, and informed Fisher that he had done so. That latter fact constituted the offence. The chairman (Ald. Taylor) said that if what Mr. Shearman had done was an offence, he was afraid that nearly every employer in the country was committing the same offence. As a shipbuilder he had certainly done so. They were asked by the Shipbuilders' Federation to prepare a list of men they wanted released from the Army. In order to do that, they were obliged to communicate with the men in order to get the necessary particulars to enable them to "assist" to get the men released. That, according to the prosecution, was an offence. It seemed to the Bench a great pity that the authorities had not brought a stronger case, instead of relying upon the one before them, which had no bottom to it. In this case, the Bench felt the authorities were absolutely unjustified in taking the proceedings. Had it not been that Mr. Shearman had pleaded guilty to a technical offence, they would have dismissed the case. As it was, they ordered him to pay the costs.

Congest on in Finland.—*Hansa* anticipates a severe shortage of shipping space in Finland directly after the war, owing to the present accumulation of large quantities of timber, to secure which, purchasers are merely awaiting opportunity.

Deutsche Schiffskreditbank A.G., Duisburg.—This concern has been founded, under the lead of the Barmer Bankverein, Hinsberg, Fischer & Co., with a share capital of £344,000, of which 25 per cent. and the full statutory reserve of £34,300 are paid up.

Shipbuilding at Danzig.—The small Danzig yards received no orders for large sea-going vessels for a long time before the war. Johannsen & Co.'s yard was closed completely in 1914 owing to lack of work; and the J. W. Klawitter yard which formerly built many large steamships and sailing vessels was latterly engaged on special vessels and on vessels for inland service. Recently, however, there has been a great revival in building activity and the Klawitter yard has received orders for a 4,000-ton d.w. cargo steamship from the Flensburger Dampfschiffahrts Gesell. von 1869; and for a similar vessel from the Flensburger Dampfer Cie.

Deutschen Schiffs Pfandbrief Bank A.G., Berlin.—The bank has been given provisional permission to start business, subject to the observance of certain rules concerning terms and conditions of loans. The share capital is £490,000, of which 25 per cent. is to be paid up, and 10 per cent. set aside for an organisation fund. The Dresdner Bank, National Bank and Berliner Handels Gesell. are interested in the new bank, and the first chairman is Rechtsanwalt Schäd, of the Deutsche Hypothekenbank A.G. (Berlin). In the first instance, the company will advance up to 60 per cent. of their value on river and coastal vessels on condition that the loan be repaid by a sinking fund within 10 to 12 years.

Deutsche Schiffsbeleihungsbank A.G., Hamburg.—This shipping bank is now duly registered. Its scope includes loans on German sea and river vessels, and the purchase of vessels or participation in shipowning concerns when necessary to protect the bank's interests. The foundation capital of £490,000 has been taken up (at 106 per cent.) by the founders, viz.: the Commerz u. Diskonto Bank, the Vereinsbank, M.M. Warburg & Co., Nottebohm & Co. (all of Hamburg); and J. H. Stein, Cologne; Mittel Deutsch Privatbank, Magdeburg; J. Dreyfus & Co., Frankfurt; Oldenburg Landesbank; Deutsche Nationalbank; Kommanditgesellschaft auf Aktien, Bremen; and E. F. A. Dahlstrom, Hamburg.

Verband deutscher Schiffs. u. Befrachtungsmakler.—This association of ship and freight brokers has been formed to represent the interests of its members to military and civil authorities, shipping companies, parliamentary and commercial bodies, &c.; also, it purposes to assist in securing tonnage at home and abroad. The board includes Konsul Metzler, Stettin (chairman); Paul Barkhan (firm of H. Danelsberg), Bremen, vice-chairman; W. Dahlstrom; H. Eckhusen (firm of A. Bolten); W. Millers; A. Ascher (Johs. Töde, Altona); Conrad Kirchmeyer (C. J. Klingenberg & Co., Bremen); G. Gusovius (Storrer & Scott, Königsberg); C. Bautz (W. Ganswindt, Danzig); F. Heinrich, Lubeck; A. Meyer (Cohrs & Amme, Stettin).

Fiume-America Line.—The *Magdeburg Zeitung* reports a favourable conclusion to the negotiations which have been in progress for some time past in Berlin between the managing directors of the Norddeutscher Lloyd and the Hamburg-Amerika line, and the heads of the Austro-Americana and Hungarian Adria companies, concerning the establishment of a direct service between Fiume and America. The scheme proposed is that an independent Hungarian company be formed with a capital of £833,000, to commence with. "The most difficult problem in the organisation was the provision of the necessary tonnage; it is understood that the vessels will be provided in the first instance by the foreign companies, particularly the Austro-Americana."

Concrete Keelsons in Wooden Vessels.—The following particulars are from a discussion by Director Bruhn of the Norske Veritas, with regard to the use of ferro-concrete keelsons as a solution to the difficulty of obtaining large timber:—The keelson bolts being put in place with their heads up and nuts below, and the requisite reinforcement being assembled, the concrete can be cast, and when it is set, the mould nuts can be removed. Working on this principle, any desired form can be produced easily. Damage from above (by cargo or otherwise) may be prevented by planks kept in place by iron bands, this method of attachment being preferable to additional bolts in the concrete. By continuing the concrete keelson in one piece

up the ends of the vessel, advantageous construction is obtained, making possible the building of rather larger vessels than heretofore from given timber supplies.

Portuguese Shipping Activity.—The *Aquicia Americana* (Rio de Janeiro) reports that the Portuguese Chamber of Commerce of Sao Paulo has asked the energetic support of the Portuguese Government in establishing a regular line of steamers between Portugal and Brazil. A meeting of shareholders of the Portuguese Bank in Brazil, recently constituted, is to be held to negotiate the constitution of a Portuguese steamship company.

Parliamentary Registration of Seamen.—The Marine Department of the Board of Trade have issued the following notice with regard to the registration of seamen as parliamentary electors:—"The Representation of the People Act, 1918, provides that merchant seamen (including masters and apprentices), who are British subjects over 19 years of age serving abroad or afloat in connection with the war, may be registered as parliamentary electors for the places in which they would have had the necessary qualification if they had not been so serving. Special provision has been made for British seamen who are engaged on foreign-going articles of agreement at mercantile marine offices to make applications, when they are being engaged, to be registered as parliamentary electors. Seamen serving in home trade and coasting vessels are also entitled to be registered as parliamentary electors for the places in which they would have had the necessary qualification if they had not been so serving, and such seamen in home trade and coasting vessels should apply at a mercantile marine office for the proper forms of application, and for information as to the manner in which they may make claims."

Italian Shipbuilders and Shipping Companies.—The following particulars are given, as showing the present position of the principal Italian shipbuilding and shipping companies:—

Company.	Capital.
<i>Shipbuilders</i> —	
Soc. Ligure di Armamento, Genoa	New company: £198,000.
Soc. Anon. Italiana Gio. Ansaldo & Co., Genoa ..	Raised to £1,755,000.
Soc. Anon. Cantieri ed Officine meridionali, Naples	New company: £70,400.
Soc. Fiat S. Giorgio, Spezia	Raised to £874,000.
Instituto Naz. d'Industria e Commercio, Rome	New company: £119,000.
<i>Shipowners</i> —	
Soc. Anon. Ligure di Armamento, Genoa ..	New company: £198,000.
Soc. Naz. di Navigazione, Genoa	Raised to £2,380,000.
Soc. di Navigazione Italo-Americana, Turin ..	New company: £198,000.
Lloyd Sabauda, Turin	Raised to £1,590,000.
Soc. della Navigazione Alta Italia, Turin ..	Raised to £595,000.
La Transoceanica, Naples	£3,960,000, by amalgamation.
Soc. Italiana di Navigazione "Lucania," Naples	Raised to £298,000.
Lloyd Meridionale, Palermo	New company: £179,000.
Jonio, Taranto	New company: £139,000.

Danube Shipping Union and Policy.—Following the subscription of the Suddeutsche Donau Dampfschiffahrtsgesell. to the agreement between the Donaudampfschiffahrts Gesell. and the Ungarische Fluss u. See Schiffahrt Gesell. concerning freight rates and conditions, the Bayerischen Lloyd has now entered the combine. A standard scale of tariffs will be enforced, the cargoes principally concerned being wheat, timber, and bale goods. According to *Hamburger Nachrichten*, the Bayerischen Lloyd has issued an official denial of reports which have been circulated concerning its close connections with the Hamburg-Amerika Line and the Levante Line, and its being patronised by the Deutsche Bank. In Austria, the whole activities of the Bayerische Lloyd have apparently been regarded with suspicion and fear—the view taken being that the Lloyd had received substantial backing from the State and that far-reaching competition was to be feared—nothing short, in fact of a comprehensive organisation of Danube and Black Sea shipping in German hands. "The Bayerische Lloyd has now reduced these fears to their proper dimensions," we are told, "but at the same time it has made it clear that it and its associated companies will devote all their powers (within the limits of their rights and agreements) to developing German imports of raw materials from the East via the Danube. One may reckon upon further growth of Danube shipping following upon the new agreement, for the activity of the Bayerische Lloyd and the ambitious nature of its plans are worthy of the importance of the Danube waterway." Were we Austrians we should not feel reassured by this statement as to Germany's designs upon the Danube and the Black Sea ports.

OFFICIAL NOTICES AND SHIPS FOR SALE.

THOS. PINKNEY & SONS

(Thos. Pinkney, S. Renny Pinkney, David R. Pinkney).

SHIPPING AUCTIONEERS.

BROKERS FOR THE SALE AND PURCHASE
OF STEAMERS, &c.

LICENSED VALUERS.

VALUATIONS FOR WAR LOSS, PROBATE, SALE, &c.

BALTIC CHAMBERS, SUNDERLAND.

Telegrams: "SPARDECK."

BY order of the Proprietor, who is retiring from business, Messrs. FULLER, HORSEY, SONS & CASSELL are instructed to invite tenders for the purchase, in one lot, as a going concern, of the old-established

Freehold Shipbuilding and Engineering Works,

at Canning Town, of A. W. ROBERTSON & CO. The works, which have the extensive frontage to Bow Creek of 480 ft., contain an area of nearly two acres. The buildings are conveniently arranged for economical construction, and are equipped with modern shipbuilding and engineering plant. The whole of the fixed plant, machinery and fixtures, as also the GOODWILL of the business, with patterns and drawings and work in progress, will be included in the sale. The purchaser will have an option of acquiring the loose plant, tools, stock, and stores at a valuation. He will be entitled to the beneficial interest in the running contracts, but required to give an indemnity in respect thereof.

Tenders, which must be on the form attached to the particulars, must be delivered by 12 noon on Wednesday next, May 1, at the Office of the Auctioneers, 133, High Holborn, W.C.1.

The works may be viewed by orders only, to be obtained of Messrs. Forbes & Son, Solicitors, 19, Mark Lane, E.C.4, and of Messrs. Fuller, Horsey & Co., Mechanical Auctioneers and Valuers, 133, High Holborn, W.C.1.

AGENCIES WANTED.

OFFICER, invalid from the Army, is open to represent a good firm in dry-dock and colliery requisites in the Bristol Channel. Connected with shipping people for over 17 years. Apply Box 911, c/o Shipbuilding & Shipping Record, Queen Anne's Chambers, Westminster London, S.W.1.

ENGINEERING FIRM with well equipped Machine Shops, now engaged on Munitions, solicits enquiries for all classes of Turning, Drilling, Grinding, Milling, Fitting, &c. Aircraft Fittings, also Copper Pipe work a speciality. Correspondence with a view to Post War Business especially invited. The Lankester Engineering Co., 39, Eden Street, Kingston-on-Thames.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Wednesday.

All advertisements should be addressed to—
Shipbuilding and Shipping Record,
Queen Anne's Chambers,
Westminster, London, S.W.1

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and Type.	Tonnage.	Dimensions. Draught in ().	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Albion, s.v. (ex Sallerød)	658 gr. 627 net 1,050 d.w.	164½' × 35½' × 17½' (17')	J. L. Enlund, Raumo, to buyers not stated	A. Aanonsen, Arendal (1895)	—	Price about £13,000.
Amelia, ss. (single dk.)	357 gr. 146 net	145' × 22½' × 9½'	Magdalen Islands S.S. Co., Halifax, N.S., to Mr. B. L. Rafuse, Bridgewater	S. McKnight & Co., Ayr. (1894)	19, 42 × 30 (Muir & Houston, Glasgow)	—
Aryan, s.v.	2,124 gr. 1,939 net	248½' × 42½' × 26½'	E. P. Carver, Boston, Mass., to L. A. Pederson, S. Francisco	C. V. Minott, Phippsburg, Me. (1893)	—	Price about £20,000.
Chika Maru, ss.	757 gr. 469 net 903 d.w.	187' × 26½' × 18½'	Hokuyo Kisen Kaishiki Kaisha, Nanao, to Chosen Yusen Kaishiki Kaisha, Corea	Osaka Iron Works, Osaka (1905)	13, 21½, 36 × 27 (Osaka Iron Works)	—
Clermiston, ss. (single dk.) (ex Rocío)	1,282 gr. 803 net 1,900 d.w.	232' × 34½' × 16½' (16')	Thordis Shipping Co., London, to the Watergate Steam Shipping Co., Newcastle	W. Gray & Co., W. Hartlepool (1895)	18, 28½, 47½ × 33 (Central Marine Eng. Wks., W. Hartlepool)	Price about £45,000. Sold in 1916 for about £40,000.
Devonshire, ss. (single dk.)	500 gr. 199 net 600 d.w.	175' × 26½' × 10½'	J. J. Mack & Sons, Liverpool, to John Kelly, Ltd., Belfast	J. Fullerton & Co., Paisley (1894)	22, 44 × 30 (Ross & Duncan, Glasgow)	—
Don Federico (dredger)	481 gr. 184 net	160' × 35' × 11½'	Tilbury Contracting & Dredging Co., London, to the James Dredging, Towage and Transport Co., Southampton	Ferguson Bros., Pt. Glasgow (1909)	12, 19, 32 × 24 (Ferguson Bros.)	—
Emerald Wings, ss. (single dk.)	3,139 gr. 1,985 net 5,500 d.w.	331½' × 49' × 21½' (20' 7")	Limerick S.S. Co., Limerick, to buyers not stated	Russell & Co., Pt. Glasgow (1911)	23, 37, 61 × 42 (Clyde S.B. & E. Co., Pt. Glasgow)	—
Kalmarsund, No. 9, ss. (single dk.)	484 gr. 318 net	135' × 25½' × 10½'	Angb. Aktiebolaget "Kalmarsund," Kalmar, to Hedborg & Strindberg, Stockholm	Oskarshamns M. V. Aktieb., Oskarshamn (1909)	16½, 35 × 20½ (Oskarshamns M. V. Aktieb.)	Price about £23,000.
Robert Bruce, ss. (single dk.)	4,207 gr. 2,623 net 7,300 d.w.	364½' × 51' × 26' (23' 5")	R. W. J. Sutherland & Co., Cardiff, to the Palace Shipping Co., Liverpool	Sir Raylton Dixon & Co., Middlesbrough (1917)	25, 41, 68 × 45 (Richardsons, Westgarth & Co., Hartlepool)	—
Thorum, ss. (single dk.)	900 gr. 600 net	214' × 34' × 16'	S. Hansen, Bergen, to Aktiebolaget Jacob Kjøde, Christiania	Hødens Verks. Akties, Larvik (1916)	15½, 25, 42 × 30 (Akers, Mek. Værks., Christiania)	Price about £84,250.
Trevelyan, ss. (pt. awning dk.)	3,066 gr. 1,986 net	321½' × 41½' × 21½' (22' 11")	Hain S.S. Co., St. Ives, to buyers not stated	J. Readhead & Sons, S. Shields (1894)	24, 40, 64 × 42 (J. Readhead & Sons)	—

Tritonwerke A.G.—This company was established recently with a view to erecting a large new shipyard on the Baltic. A site some 20 acres in extent, and situated on the Trave, is to be purchased from the State of Lubeck. The scheme provides for six building slips, capable of accommodating vessels up to 10,000 or 15,000 tons.

Odin Deutsche Schiffshebungsgesellschaft, Berlin.—This company has been founded under the lead of the Deutsche Versicherungsbank for the purpose of raising and salving vessels and cargoes. Branches may be established elsewhere than at Berlin, as may be necessary. The foundation capital is £245,000, and the minimum deposit £4,900. The principal interest lies with the Deutsche Versicherungsbank, but other participants are German transport-insurance companies, certain Austrian firms, and an engine works

(not named). The company already owns five special salvage vessels, including two salvage vessels of about 600 tons gross, equipped with the latest appliances. Several promising projects have already been taken into consideration, and work will be commenced directly the weather is favourable.

FORTHCOMING LECTURES & DEBATES.

INSTITUTE OF METALS.—Thursday, May 2, meeting at the Institute, 36, Victoria Street, Westminster, S.W. Lecture by the Hon. Sir Charles Parsons on "The Formation of Diamonds."

NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS.—Tuesday, April 30, meeting in Lecture Theatre of the Literary and Philosophical Society, Westgate Road, Newcastle-on-Tyne, at 6 p.m. Paper by Mr. Harry R. Ricardo on "High Speed Internal-Combustion Engines."

SHIPPING SHARE MARKET.

The uncertainty as to the provisions in the Budget, including rumours of an increased excess profits tax, exercised a depressing influence on the shipping share market at the opening of the week. There are also indications that members of provincial exchanges are also following the London lead and clearing their books in view of the demands for military service. Most of the leading shipping companies' issues show a fractional decline, but it is an excellent sign of the strength with which the shares are held that there has been no pressure to sell. There is little doubt that the great increase in the number of investors who hold shipping shares during the past three years has brought considerable elasticity to the market which is proving a valuable brake at the present time, when the sales of a few large holders would demoralise the whole list. It is unfortunate that those companies which have issued their reports are able to give only the most meagre statement of accounts,

either owing to "depletion of staff" (as in the case of Frederick Leyland & Co.) or because there are outstanding claims connected with the Government. Frederick Leyland & Co. is paying a final dividend of 5 per cent. and carrying forward £28,000, but there is no indication in the brief accounts published of the amounts of any interim dividends which have been paid or of the total amount of the trading profits. The Sutherland Steamship Company's accounts which have been issued indicate reduced profits, as was expected. The dividend is 30 per cent. for the whole year, with £10,309 carried forward. The dividend is the same as last year and twice the rate of pre-war years, so that the shareholders have no reason to be dissatisfied. In the shipbuilding section there is a fair amount of business, and in armament and iron and steel issues the market is well sustained by small buying orders from the provincial centres. Richardsons Westgarth ordinary has suffered from the defeat of the reconstruction scheme, which causes a deadlock in the financial position so far as the shareholders are concerned. There has been some profit-making in Steel Company of Scotland shares, which have reacted to 14½ sellers.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING.							IRON AND STEEL.						
Name.	Share and paid.	Extreme quotations, 1917.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.	Name.	Share and paid.	Extreme quotations, 1917.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
African S.S.	20	30½-25½	10	7½	28		Babcock & Wilcox... ..	Ord.	1	68/-52/6	15	4½	65/-
Allan Line	100	94-82	4	4½	92		Baldwins	Cum. pref.	1	20/-15/-	5½	5½	20/-
Anchor Line	10	105½-102½	5½	5½	9½		Do.	Deb.	Stk.	84-82	4½	5½	84
Do.	Stk.	105½-102½	4½	4½	103		Bayliss, Jones	Cum. pref.	1	—	5	7½	—
Argentine Nav.	Cum. pref.	1	25/-14/3	6	5½	22/9	Bell Bros.	Cum. pref.	10	10-9½	6	6	10
Do.	Ord.	1	20/6-6/6	Nil.	Nil.	16/6	Do.	Deb.	Stk.	80-73½	5	7	74
Australasian Un. S. Nav. Deb.	Stk.	80½-79½	4	5	81		Bessemer (Henry)	Ord.	1	34/6-24/6	12½	7½	32/-
Belfast Steam	10 (5pd.)	—	5	5	5		Bolckow Vaughan	Ord.	1	30/-22/2	11	7½	27/3
British & Argen. Nav. ... Deb.	Stk.	84-80	4½	5½	80½	- ½	Do.	Cum. pref.	20	17½-16½	5	5½	16/9
British India Nav.	Deb.	Stk.	84-82	4½	5½	81½	Cargo Fleet Iron	Ord.	1	24/9-17/3	3	2½	26/1
British S.S. Invest. Trust Def.	Stk.	460-344½	50*	11½	427		Do.	Deb.	100	84-81½	4½	5½	82
Do.	Pref.	Stk.	105½-104	6	5½	102	Conssett Iron Co.	Ord.	1	36/3-24/10½	50	10	95/3
Do.	Deb.	Stk.	74½-70	4½	6½	72	Dominion Iron & Steel ...	Bds.	1	88½-71½	5	7	73
Cairn Line	Deb.	Bds.	94-90	5	5½	90½-91	Dorman, Long	Ord.	1	50/-30/9	8½	—	36/-
Do.	Ord.	1	51/6-40/9	20†	8	54/-	Do.	Deb.	Stk.	—	4	5½	71
Clan Line	Ord.	10	55½-26½	25	5½	49	Ebbw Vale Steel & Iron Ord.	1	30/6-24/6	12½	9	29/1½	
Court Line	Ord.	£1	40/6-29/6	13	5½	33/4½	Guest, Keen & Nteffs Ord.	1	89/-62/6	15*	3½	82/6	
Cunard SS.	Ord.	1	85/-63/9	20*	5	82/-	Do.	Cum. pref.	5	5½-5	5	4½	5½
Do.	Cum. pref.	Stk.	97½-82	5	5½	83½	Do.	Deb.	Stk.	79½-73½	4	5½	77
Do.	Deb.	Stk.	100-93½	4½	4½	98	Hadfield's Steel Foundry Ord.	1	107/6-78/6	30	5½	100/6	
Elder Line	Deb.	Stk.	95-89	4½	4½	103	Ibbotson Bros.	5 (4 pd.)	7-6½	7½	4½	6½	
Elder Dempster	Cum. pref.	1	19/-17/-	5½	6½	19/-	Jessop (W.) & Sons ... Ord.	5 (4 pd.)	10-8	15*	6½	9½	
Do.	Deb.	Stk.	89-85	5	5½	83	Leamington Steel Cum. pref.	10	—	5	7½	7	
Ellerman Lines	Pref. Ord.	10	94-88	4½	4½	9½	Lysaght (J.)	Cum. pref.	1	25/-20/-	6	6	20/-
Do.	Guar. Ord.	10	9-8½	4½	5½	8	Do.	2nd pref.	1	19/9-19/4½	6	6	20/-
France Fenwick	Cum. pref.	5	95/3-85/-	5½	6½	87/6	Manganese Bronze	Ord.	1	—	6	11	1½
Furness, Withy	Ord.	1	60/9-41/6	20*	6½	63/-	Do.	Cum. pref.	1	—	6	8	—
Do.	Cum. pref.	10	9-7½	5	5½	8½	North-Eastern Steel ... Deb.	Stk.	—	4½	—	—	
General Steam Nav.	Ord.	1	24/9-21/6	10	7½	32/6	Palmer Ship & Iron "A" ...	1	13/-9/9	Nil.	Nil.	13/9	
Do.	Pref.	1	19/4½-15/-	5	6½	15/6	Scott (Walter)	Ord.	1	29/4½-21/3	15	10½	29/-
Houlder Line	Cum. pref.	5	82/6-75/-	5½	6½	80/-	Do.	Pref.	1	19/9-16/-	6	7½	19/9
Do.	Deb.	Stk.	—	4½	4½	91	Sheffield Forge	Ord.	1	—	15	4½	70/-
Houlder Bros.	Cum. pref.	5	—	5½	6½	4	Shelton Iron & Steel ... Ord.	1	24/6-16/10½	7½	6	21/7½	
Do.	Deb.	Stk.	—	4½	5½	82	Do.	Deb.	100	91½-91	5	5½	91½
India Gen. Nav. & Rly. ... Ord.	10	11½-8½	6	5½	11½		S. Durham Steel & Iron Ord.	1	42/9-29/6	10	4½	44/-	
Indo-China N.	Pref. Ord.	5	97/6-87/6	6	6½	97/6	Do.	Cum. pref.	1	20/9-18/7½	6	6½	20/9
Irrawaddy Flotilla	Ord.	40	—	12½	5	100	Do.	Deb.	Stk.	81-80	4½	5½	80
Khedivial Mail	Ord.	1	40/-24/-	20	12½	36/6	Steel Co. of Scotland ... Ord.	10	—	10	6½	15½	
Do.	Pref.	5	78/3-70/-	5½	7½	77/6	Stewarts & Lloyds ... Pref. ord.	10	17-16	10	6½	16	
Do.	Deb.	Stk.	95½-93	4½	4½	94½	Do.	Cum. pref.	10	—	6	4½	13½
King Line	Ord.	1	42/6-31/6	12	5½	44/9	Stone (J.)	Cum. pref.	10	8½-7½	5	6½	7½
Lampart & Holt	Cum. pref.	£1	20/4½-18/-	6	6	19/7½	United States Steel ... Ord.	100½	124-109½	8	7½	96½	
Leyland (F.)	Cum. pref.	10	8½-7½	5	5½	8	Do.	Cum. pref.	100½	—	7	7½	114½
Mercantile SS.	Ord.	5	30½-15	40	8	30½	Vickers Ltd.	Ord.	1	44/6-35/3	12½	5½	42/6
Do.	Pref.	1	21/-15/9	5	6½	21/-	Do.	Pref.	Stk.	84-81	5	6	82
Moor Line	Ord.	10	35-20	30	6½	41	Do.	Deb.	Stk.	79-74½	4	5½	76
Nelson Steam Nav.	Deb.	100	—	5	5½	92½	Weardale Steel	Def. ord.	1	32/3-23/-	19½	13½	29/-
New Zealand	Ord.	£10	—	8	2½	32½	Do.	Cum. pref.	1	25/3-18/9	6	5½	24/9
Do.	Deb.	Stk.	87½-86½	4	4½	88½	Do.	Deb.	Stk.	—	4	6½	62
Nitrate Producers SS. ... Ord.	5	25½-20	30	6½	24½		Working Iron & Steel Ord.	1	30/3-21/-	10	6½	28/9	
Do.	Cum. pref.	5	100/-90/-	5	5	5						+1/3	
Oceanic Steam Nav.	Deb.	100	98½-84	4½	4½	94							
Orient. Stm. Nav. Co. Cum. pref.	10	94-88½	5	5½	9½								
Do.	Deb.	100	92-88	4½	5½	88							
P. & O. S. N.	Cum. pref.	100	93½-84	5	5½	92							
Do.	Deb.	100	342-295	18	5½	333½							
Do.	Deb.	Stk.	65½-63½	3½	5½	64							
Prince Line	Ord.	1	6½-3½	30	5½	117/6							
R.M.S.P.	Ord.	100	125-109½	7	5½	120							
Do.	Pref.	Stk.	85½-80	5	6	84½							
Do.	Deb.	Stk.	86-79	4½	5½	79							
Shaw, Savill & Alb. Cum. pref.	5	87/6-80	5½	5½	85/-								
Shell Transport	Ord.	1	6½-9½/3	35	6½	5½							
Do.	Cum. pref.	10	92-9½	5	5½	9½							
Sutherland SS. Co.	£1	75/-30/9	30	5½	101/-	-1/6							
Union-Castle SS.	Cum. pref.	10	72-7½	4½	6	7½							
Do.	Deb.	Stk.	90-86	4	4½	89							
West Hartlepool	Pref.	10	72-7½	5½	7½	7½							
INSURANCE.							SHIPBUILDING AND MARINE ENGINEERING.						
Alliance	20 (2½ pd.)	10½-9	12/-	7	10½	- 1½	Armstrong, Whitworth Ord.	1	45/-36/-	12½	5½	42/6	
London Assurance	25 (12½ pd.)	60½-46½	22	7	63½		Do.	Cum. pref.	5	73/9-67/-	4	5½	67/6
Merchants' Marine Insurance ...	10 (2½ pd.)	10½-6½	10	6	10½		Do.	Deb.	Stk.	73-73	5	6½	75½
N. British & Mercantile ... Ord.	25 (6½ pd.)	36-29	40/-	6½	34½		Beardmore (W.)	Deb.	100	93-89	4½	5	90
Phoenix Assurance	10 (1 pd.)	7½-6	40	7	8½		Brown (John)	Ord.	1 (16s. pd.)	28/-22/9	12½	7	27/6
Royal Exchange Assurance ...	Stk.	241½-187	10	4½	251		Do.	Cum. pref.	5	84-7½	5	5½	8½
Sea Insurance	10 (2 pd.)	27½-24½	10	6	27		Do.	Ord.	5	7½-6½	10	7½	6½xd
World Marine, Limited	5 (2 pd.)	6½-55/-	10	8	6½		Cammell Laird	Cum. pref.	5	85/6-74/6	5	6½	81/6
							Do.	Deb.	100	83½-79½	4½	5½	84
							Dunlop (Jas.)	Ord.	1	28/9-16/-	10	9½	22/3
							Do.	Cum. pref.	1	18½-16/6	6	7½	17/6
							Fairfield Shipbldg Cum. pref.	10	8½-8½	6	7½	8½	
							Fleming & Ferguson ... Ord.	10	—	10	7	14½	
							Gray (Wm.)	Deb.	100	100-95½	4½	4½	97½
							Hawthorn (R. & W.) Leslie Ord.	1	—	12½	6½	40/6xd	
							Henderson (D. & W.) Cum. pref.	1	—	5	9	—	
							Richardson Westgarth Ord.	1	10/3-5/-	Nil.	Nil.	107/-	
							Do.	Cum. pref.	1	19/9-12/6	Nil.	Nil.	18/3
							Do.	Deb.	Stk.	67-62	4½	6½	66
							Simons (W.)	Cum. pref.	10	—	5	5	9½
							Swan, Hunter & W. R. ... Ord.	1	51/-33/6	12½	5½	56/6	
							Do.	Cum. pref.	1	17/3-17/-	5	5½	17/-
							Do.	Deb.	Stk.	78-77	4½	5½	77
							Thornycroft (John I.) ... Ord.	1	45/-16/-	17½	8½	41/-	
							Do.	Cum. pref.	1	19/-16/-	6	6½	18/6
							Do.	Deb.	100	—	5	5½	82
							Wallend Slipway	Ord.	1	2-1½	10	2½	72/6
							Do.	Cum. pref.	1	1-1	5	5	1

* Including bonus.

† Also 20 % in shares.

‡ Treasury price.

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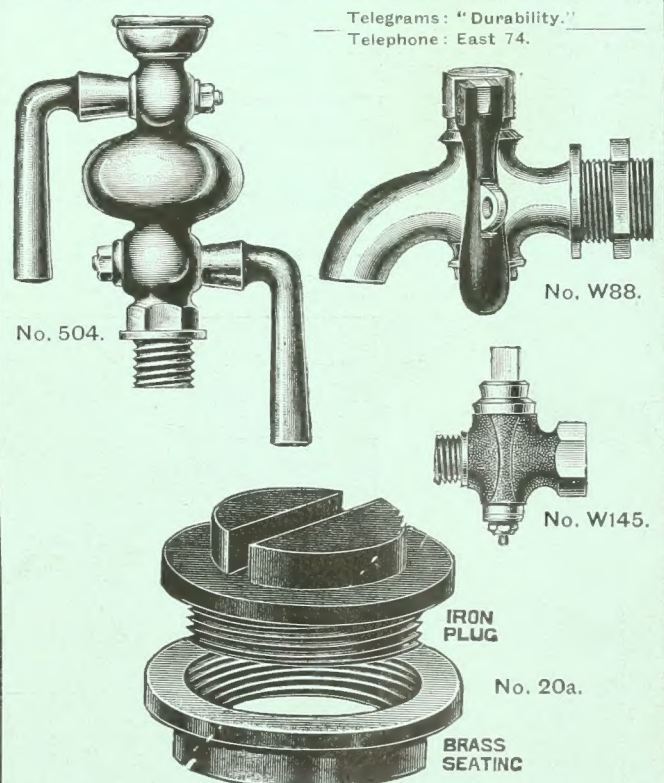
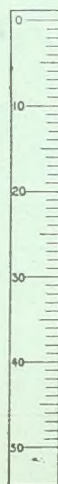
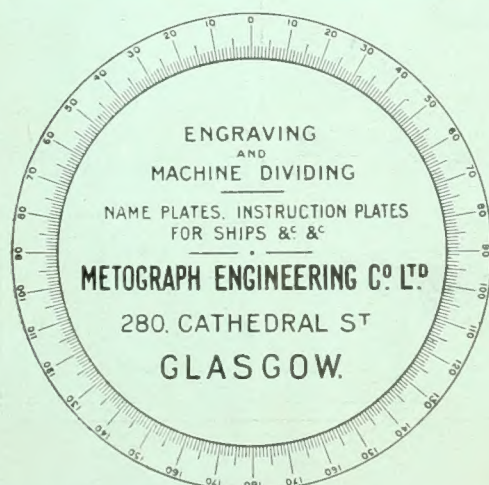
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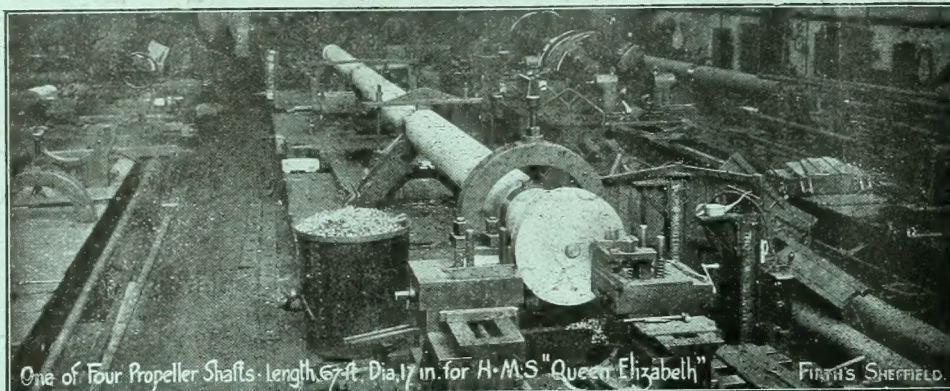
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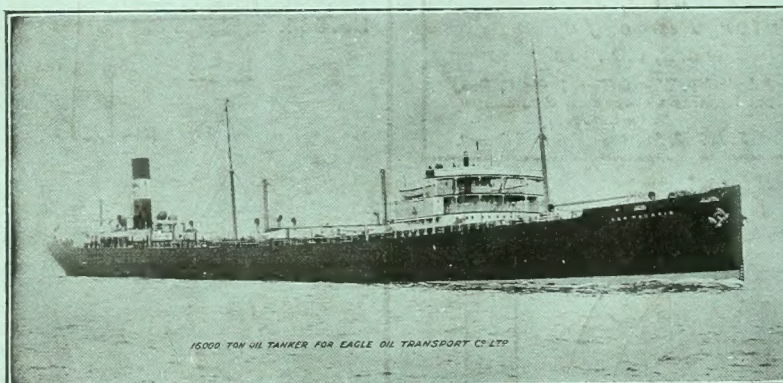
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